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MONTHLY PROGRESS REPORT NO. 1
for the period November 11-30, 1977
to
ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

1860 Lincoln St., Suite 900
Denver, CO 80203

Contract No. 68-01-3982

Colorado C-b Tract

aeromet inc.

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by

Aeromet, Inc.
P.O. Box 45447
Tulsa, OK 74145

Colorado C-b Tract

1.0 INTRODUCTION

Low level temperature and wind data were collected for November 1977 near the Colorado C-b Tract 25 miles west of Rio Blanco. The data collection was made using a 30 gm helium filled pilot balloon with a temperature sonde attached, two theodolites and a TSR-2 receiver/recorder. The observations were scheduled ½ hour after sunrise and at 1400L, twice a day, every other day. However, since the C-b Tract is not manned weekends, scheduled launches that fall on Saturday are released the preceeding Friday; Sunday launches are released the following Monday.

The pilot balloon had an ascent rate of 500 ft/min and was tracked by two theodolites for 12 minutes with the azimuth and elevation angles recorded every 30 seconds on cassette tape recorders. The tapes were transcribed to pilot balloon forms after completion of the launch.

The temperature sonde operated at 403 MHz and the signal was received by a ground plane antenna at least 16 ft AGL which was attached to the Aeromet, Inc. TSR-2 receiver/recorder. The TSR-2 receiver has a built-in Rustrak strip chart recorder and the temperature was recorded within the range from -50°C to +50°C. A baseline temperature calibration was performed with each T-Sonde by the adjustment of the recorded temperature to match the thermometer measured temperature next to the transmitting sonde. Once the calibration check was finished the balloon was released with the sonde attached and the temperature was recorded for at least 20 minutes. At the completion of each observation the data mere mailed to Aeromet, Inc.

The collected temperature and wind data are accurate. The obvious errors sometimes found in the recorded azimuth and elevation angles are corrected without mention. For example, the sequence of elevation angles . . . 76.6, 75.3, 47.8, 73.8 . . . can be corrected without ambiguity. The more ambiguous errors are brought to the attention of the reader in the Pilot Balloon Summary with further filtering left to the individual user.

2.0 DATA SUMMARY

2.1 Colorado C-b Tract Field Summary

Data collection began at the Colorado C-b Tract November 11, 1977. A total of 19 pibals were launched, 13 of which were tracked by two independent theodolites. Ninety five percent of the temperature data were recovered with 100% and 93% of the wind data recovered from the first and second theodolite positions respectively.

Because of the short data collection period for November, comparison of the wind data derived from the two independent theodolites will not be attempted in this report.

No major equipment problems were encountered at the C-b Tract during the month.

2.2 Mixing Layer Height

The average mixing layer height was computed for the morning and afternoon based on the morning and 1400L temperature soundings. The balloon release ½ hour after sunrise is near enough to the minimum temperature to assume the correctness of the calculated mixing layer heights. The afternoon balloon release is generally not at the time of maximum heating and the user of the mixing layer height data must be aware that minor changes in the calculated values can be expected. Without equipping the field sites with minimum/maximum thermometers the extrapolation of the afternoon data can not be justified in establishing a data base for statistical analysis. The approximation of the afternoon maximum temperature would be a "calculated guess" for there are: 1) local effects which are to be determined and would be filtered out with extrapolation, 2) mountain effects which alter the lower 1500m (e.g. downslope effects), and 3) meteorological effects which can alter the expected change in the sounding (e.g. advection, moisture, etc.).

It is felt that to better define the mixing layer height that a variety of "heat island" effects should be viewed. The rigourous method would be to define 15 "heat island" effects ranging from 0 to 14°C and let the user decide which would best serve his needs. However, for these analyses 0°, +5° and +10° "heat island" effects are calculated and listed for the morning and afternoon soundings in the table Average Mixing Layer Height.

The symbol N/D means that no mixing layer height was defined and sfc is the abbreviation for surface.

2.3 Stability and Inversion Classification

The temperature and wind data were edited to remove data felt to cause anomalous results in the stability and inversion classification schemes. Only the stations listed prior to the table classifying the inversions were used in the calculations.

3.0 DATA PROCESSING

3.1 Printed and Plotted Output

Wind speeds and directions are computed independently from the azimuth and elevation angles measured while tracking the balloon with each of the two theodolites. The wind speed and direction are plotted versus height and printed out at 30 second intervals. The plots are labelled to distinguish from which theodolite the data were derived. The printed output includes the AGL and MSL height of the calculated wind value and the orthogonal components of the wind. The wind data are also written to magnetic tape.

The temperature data are processed and plotted with the temperature and the lapse rate per 300 meters versus height at 15 second intervals. Tic marks are placed on the temperature plot at significant levels. A solid line to the right side of the plot indicates the data for that layer are interpolated temperature values. The temperature data are also printed out at significant levels and at standard levels of 150, 300, and 500 meters AGL; also at 2500, 3000, 4000, 5000, and 6000 meters MSL. The asterisk beside a height value indicates a significant level while a "?" indicates interpolated data. The temperature data are also recorded on magnetic tape.

The temperature data are also processed to produce a monthly summary of inversion layers and lapse rates within the inversions and from the inversion base to the surface by means of the Holzworth classification scheme for inversions (Holzworth, G. C., 1974: "Climatological Data on Atmospheric Stability in the United States". Paper presented at the American Meteorological Society Symposium on Atmospheric Diffusion and Air Pollution, September 9-13, 1974. Santa Barbara, California.)

The temperature and wind data are processed together to produce a monthly average bivariate frequency distribution of wind direction versus wind speed represented in the 500m layer adjacent to the ground. The distribution is presented by the six Pasquill stability classes (A-F) and a summary independent of stability. If the ΔWT/100m criterion

is met but the wind speed criterion is not met, then the wind data are checked against the criterion for the next stability class, always

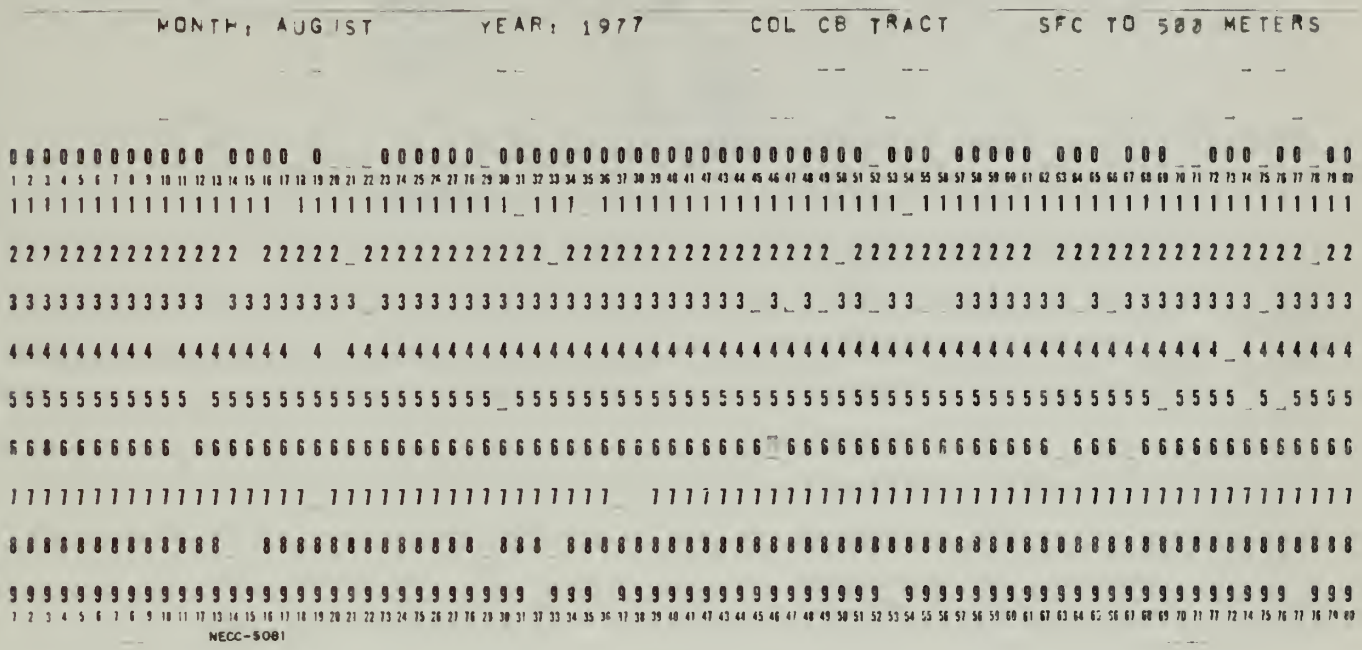
STABILITY CLASS	ΔT (°C/100m)	WIND SPEED
A	<-1.9	≤2
B	-1.9 - -1.7	≤5
C	-1.7 - -1.5	≤6
D	-1.5 - -0.5	ALL SPEEDS
E	-0.5 - 1.5	≤5
F	>1.5	≤3

cascading to the D stability class. Once the wind speed criterion is met the data are classified under the new stability class even though now the lapse rate exceeds the class criterion. For example, if the ΔT/100m value is 1.7 and the wind speed is 7 m/s, the lapse rate criterion is met for the stability class F, however the wind speed criterion is exceeded. The wind speed is greater than the 5 m/s maximum limit for class E but falls within the criterion of class D, which includes all wind speeds. As a result the observational data with a ΔT value of 1.7°C/100m and a wind speed value of 7 m/s are classified under stability class D, not class F.

The data are also punched on computer cards in a format compatible with the STAR PROGRAM of the National Climatic Center, NOAA, U.S. Department of Commerce.

3.2 Punched Output

The punched output from the bivariate frequency distribution calculations include a header card as illustrated below, and the punched distribution



data for each wind direction under each stability class in agreement with the "star" output. The stability classes are number coded as follows:

STABILITY CLASS	NUMBER CODE
A	1
B	2
C	3
D	4
E	5
F	6
Independent of Stability	7

The station I.D. numbers are as follows:

STATION	I.D. NUMBER
Colorado C-b Tract	1
Hanksville, Utah	2
Lynndyl, Utah	3
Rock Springs, Wyoming	4

The month and season number codes are as follows:

MONTH	1-12
SEASON	13 = DJF 14 = MAM 15 = JJA 16 = SON
ANNUAL	17

PILOT BALLOON SUMMARY
Colorado C-b Tract
November, 1977

November 11	1434	
November 14	0807	Temperature values were interpolated over the interval from 14 1/4 to 15 1/2 minutes.
	1347	
November 15	0815	Temperature values were interpolated over the intervals from 12 1/4 to 16 1/4 minutes and 24 1/2 to 25 1/4 minutes.
	1500	Temperature values were interpolated over the intervals from 6 1/4 to 13 minutes and 15 3/4 to 16 3/4 minutes.
November 16	0825	Temperature values were interpolated over the intervals from 3 to 7 3/4 minutes and 11 to 12 3/4 minutes.
	1410	Temperature values were interpolated over the interval from 8 1/4 to 14 1/2 minutes.
November 17	0821	No temperature data received.
	1420	
November 18	0830	Balloon entered clouds after 4 1/2 minutes.
	1502	
November 21	0851	Temperature values were interpolated over the intervals from 14 3/4 to 15 1/2 minutes, 16 3/4 to 18 1/4 minutes, and 19 to 21 3/4 minutes. Balloon entered clouds after 10 minutes.
	1355	Temperature values were interpolated over the intervals from 7 1/4 to 9 3/4 minutes and 26 3/4 to 28 minutes. Balloon entered clouds after 11 minutes.
November 23	0840	
	1355	Temperature values were interpolated over the inervals from 7 1/2 to 8 1/2 minutes and 19 3/4 to 21 minutes.

PILOT BALLOON SUMMARY
Colorado C-b Tract
November, 1977

November 25	MORN	Observer missed launch.
	AFTN	Observer missed launch.
November 28	0828	Temperature values were interpolated over the interval from 11 1/2 to 12 3/4 minutes.
	1514	Balloon entered clouds after 8 minutes.
November 29	0828	
	1437	Temperature values were interpolated over the intervals from 1/4 to 17 3/4 minutes and 23 3/4 to 25 minutes. Balloon entered clouds after 14 minutes.

AVERAGE MIXING LAYER HEIGHT

Coloado C-b Tract

November, 1977

HEIGHT IN METERS

	MORNING			AFTERNOON		
DATE	0°	+5°	+10°	0°	+5°	+10°
11				200m	1550m	2350m
14	350m	950m	3500m	1200m	1800m	N/D
15	sfc	200m	1750m	1500m	2300m	N/D
16	sfc	1250m	N/D	2800m	N/D	N/D
17				400m	2600m	3050m
18	100m	N/D	N/D	500m	3100m	N/D
21	100m	1500m	1700m	1350m	1700m	3750m
23	400m	2050m	N/D	1000m	2900m	N/D
25						
28	sfc	1250m	N/D	400m	2800m	N/D
29	sfc	900m	1700m	50m	1250m	2100m

CLOUD COVER AND SIGNIFICANT WEATHER
Colorado C-b Tract
November, 1977

DATE	MORNING	AFTERNOON
11		thin overcast
14	scattered	scattered
15	scattered	scattered
16	scattered	scattered
17	scattered	
18	obscured; snow, fog	scattered
21	overcast	overcast
23	scattered	broken
25		
28	scattered	broken; snow
29	broken	overcast

COL CB TRACT ELEV 2088 METERS SOUNDING ID 4083

DATE 11/11/77 TIME 14 34MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.15
100.	250.	-0.67
250.	500.	-0.65
500.	750.	-0.59
750.	1000.	-0.79
1000.	1500.	-0.60

COL CB TRACT ELEV 2088 METERS SOUNDING ID 4991

DATE 11/14/77 TIME 08 07MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
373.	526.	0.13	-0.98

COL CB TRACT ELEV 2088 METERS SOUNDING ID 4992

DATE 11/14/77 TIME 13 47MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1097.	1402.	0.0	-1.03

COL CB TRACT ELEV 2088 METERS SOUNDING ID 4988

DATE 11/15/77 TIME 08 15MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	229.	1.51	0.0

COL CB TRACT ELEV 2088 METERS SOUNDING ID 4988

DATE 11/15/77 TIME 15 00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1,19
100.	250.	-1,03
250.	500.	-1,10
500.	750.	-0,98
750.	1000.	-0,97
1000.	1500.	-0,82

COL CB TRACT ELEV 2088 METERS SOUNDING ID 4983

DATE 11/16/77 TIME 08 25MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	114.	0,91	0,0

COL CB TRACT ELEV 2088 METERS SOUNDING ID 3109

DATE 11/16/77 TIME 14 10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1,83
100.	250.	-1,12
250.	500.	-0,82
500.	750.	-1,11
750.	1000.	-0,94
1000.	1500.	-0,93

COL CB TRACT ELEV 2088 METERS SOUNDING ID 2

DATE 11/17/77 TIME 14 20MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
861.	899.	0,0	-0,73

COL CB TRACT ELEV 2088 METERS SOUNDING ID 5002

DATE 11/18/77 TIME 08 30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.60
100.	250.	-0.71
250.	500.	-0.59
500.	750.	-1.00
750.	1000.	-0.87
1000.	1500.	-0.69

COL CB TRACT ELEV 2088 METERS SOUNDING ID 3095

DATE 11/18/77 TIME 15 02MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1054.	1092.	0.0	-0.91

COL CB TRACT ELEV 2088 METERS SOUNDING ID 4988

DATE 11/21/77 TIME 08 51MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
615.	844.	0.34	-0.92

COL CB TRACT ELEV 2088 METERS SOUNDING ID 10

DATE 11/21/77 TIME 13 55MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
707.	745.	0.0	-1.08

COL CB TRACT ELEV 2088 METERS SOUNDING ID 4984

DATE 11/23/77 TIME 08 40MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.97
100.	250.	-1.00
250.	500.	-0.78
500.	750.	-0.54
750.	1000.	-1.01
1000.	1500.	-0.73

****

COL CB TRACT ELEV 2088 METERS SOUNDING ID 5078

DATE 11/23/77 TIME 13 55MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.73
100.	250.	-0.89
250.	500.	-0.98
500.	750.	-0.91
750.	1000.	-0.73
1000.	1500.	-0.92

****

COL CB TRACT ELEV 2088 METERS SOUNDING ID 5803

DATE 11/28/77 TIME 08 28MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	76.	2.93	0.0

****

COL CB TRACT ELEV 2088 METERS SOUNDING ID 5805

DATE 11/28/77 TIME 15 14MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.66
100.	250.	-0.71
250.	500.	-0.64
500.	750.	-0.73
750.	1000.	-1.05
1000.	1500.	-0.91

COL CB TRACT ELEV 2088 METERS SOUNDING ID 20

DATE 11/29/77 TIME 08 28MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	267.	0.47	0.0

COL CB TRACT ELEV 2088 METERS SOUNDING ID 5806

DATE 11/29/77 TIME 14 37MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1421.	1459.	0.0	-0.54

MONTH NOVEMBER YEAR 1977 COL CB TRACT ELEV 2088 METERS

HOLZWORTH S CLASSIFICATION SCHEME FOR INVERSIONS
MODIFIED TO SHOW TOTAL NUMBER INSTEAD OF PERCENT

THICKNESS (METERS)	INVERSION BASE HEIGHT (M) SFC	1-100	101-250	251-500	501-750	751-1000	1000-1500	1501-2000	2001-2500	2501-3000	TOTAL
1 - 100	1	0	0	0	1	1	2	0	0	0	5
101 - 250	2	0	0	1	1	0	0	0	0	0	4
251 - 500	1	0	0	0	0	0	1	0	0	0	2
501 - 750	0	0	0	0	0	0	0	0	0	0	0
751 - 1000	0	0	0	0	0	0	0	0	0	0	0
1001 - 1500	0	0	0	0	0	0	0	0	0	0	0
> 1500	0	0	0	0	0	0	0	0	0	0	0
INV TOTAL	4	0	0	1	2	1	3	0	0	0	11
DT/DZ 5		0	0	0	0	0	0	0	0	0	0
FROM INV 4		0	0	0	0	1	1	0	0	0	2
BASE 3		0	0	1	2	0	2	0	0	0	5
TO 2		0	0	0	0	0	0	0	0	0	0
SFC 1		0	0	0	0	0	0	0	0	0	0
NO INV TOT		7	7	7	7	7	7				
DT/DZ FOR 5		0	0	0	0	0	0				
SAME 4		1	3	4	3	2	3				
LAYERS 3		3	4	3	4	5	4				
AS INV 2		0	0	0	0	0	0				
BASE 1		3	0	0	0	0	0				

DT/DZ (DEG C)/100M
5= 0,00 TO -0,40
4=-0,41 TO -0,80
3=-0,81 TO -1,20
2=-1,21 TO -1,60
1=<-1,60

MONTH NOVEMBER YEAR 1977 COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE A STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 0 SOUNDINGS FROM A SAMPLE OF 18 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH NOVEMBER YEAR 1977 COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE B STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 0 SOUNDINGS FROM A SAMPLE OF 18 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH NOVEMBER YEAR 1977 COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE C STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 0 SOUNDINGS FROM A SAMPLE OF 18 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH NOVEMBER YEAR 1977 COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.07	0.0	0.0	0.0	0.0	0.0	0.3	0.07
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.07	0.13	0.20	0.0	0.0	9.7	0.40
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.07	0.0	0.0	0.0	0.0	3.9	0.07
W	0.0	0.0	0.07	0.07	0.0	0.0	9.9	0.13
WNW	0.20	0.0	0.0	0.0	0.0	0.0	2.3	0.20
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.13	0.0	0.0	0.0	0.0	3.6	0.13
AVG SPEED	1.8	4.1	8.1	12.1	0.0	0.0		0.0
TOTAL	0.27	0.27	0.20	0.27	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE D STABILITY CLASS IS 0.83

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 0 SOUNDINGS FROM A SAMPLE OF 18 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH NOVEMBER YEAR 1977 COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.33	0.33	0.0	0.0	0.0	0.0	3.4	0.67
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.33	0.0	0.0	0.0	0.0	0.0	2.6	0.33
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	2.3	4.8	0.0	0.0	0.0	0.0		0.0
TOTAL	0.67	0.33	0.0	0.0	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE E STABILITY CLASS IS 0.17

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 0 SOUNDINGS FROM A SAMPLE OF 18 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH NOVEMBER YEAR 1977 COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE F STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 0 SOUNDINGS FROM A SAMPLE OF 18 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH NOVEMBER YEAR 1977 COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.06	0.0	0.0	0.0	0.0	0.0	0.3	0.06
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.06	0.11	0.11	0.17	0.0	0.0	8.1	0.44
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.06	0.0	0.0	0.0	0.0	3.9	0.06
W	0.0	0.0	0.06	0.06	0.0	0.0	9.9	0.11
WNW	0.22	0.0	0.0	0.0	0.0	0.0	2.3	0.22
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.11	0.0	0.0	0.0	0.0	3.6	0.11
AVG SPEED	1.9	4.3	8.1	12.1	0.0	0.0		0.0
TOTAL	0.33	0.28	0.17	0.22	0.0	0.0		1.00

NORMALIZED FREQUENCY DISTRIBUTION INDEPENDENT OF STABILITY

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 0 SOUNDINGS FROM A SAMPLE OF 18 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

COL CB TRACT ELEV 2100 FEET SOUNDING ID 4085

DATE 11/11/77 TIME 14:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	DZT SEC	DZT SEC	DZT LAPSE	WS M/S	WD DEG
	SFC		9.55				5.1	240.
0.4	150.	2238.	7.57	-1.00	-2.19	0.74	5.3	225.
1.9	500.	2588.	6.88	-0.77	-2.21	1.75	6.1	210.
2.8	412.	2500.	5.74	-0.93	-1.84	1.09	6.0	197.
3.2	500.	2588.	5.05	-1.29	-2.15	1.90	5.4	191.
5.0	912.	3000.	2.73	-2.91	-2.42	1.51	4.6	184.
12.0	1912.	4000.	-3.17	-5.91	-2.55	0.28		
18.4	2912.	5000.	-8.47	-5.30	-3.84	-0.71		
25.2	3912.	6000.	-14.55	-7.67	-3.52	-0.60		

COL CB TRACT ELEV 2088 METERS SOUNDING ID 4085

DATE 11/11/77 TIME 14:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP M/S	M/S	WD SPEED M/S	DEG
0.0	0.	2088.	2.7	5.5	5.1	240.
0.5	76.	2164.	2.5	5.5	5.7	231.
1.0	100.	2254.	3.8	5.1	5.7	229.
1.2	243.	2331.	2.8	5.4	5.6	218.
2.0	319.	2407.	2.4	5.0	6.2	205.
2.2	395.	2483.	2.1	5.3	6.1	197.
3.0	471.	2559.	2.0	5.4	5.5	189.
3.5	547.	2635.	1.5	5.2	5.2	185.
4.0	624.	2712.	-0.9	5.3	5.4	176.
4.2	700.	2788.	-1.1	5.0	4.7	168.
5.0	776.	2864.	-1.5	5.2	5.5	155.
5.5	852.	2940.	-1.9	5.5	5.5	157.
6.0	928.	3016.	0.7	4.8	4.6	169.
6.2	1005.	3093.	1.1	4.5	4.0	194.
7.0	1081.	3169.	2.5	5.3	5.0	204.
7.5	1157.	3245.	3.1	4.9	5.5	215.
8.0	1233.	3321.	4.0	5.0	6.2	232.
8.5	1309.	3397.	5.5	4.5	5.7	210.
9.0	1386.	3474.	6.0	4.0	7.5	250.
9.5	1462.	3550.	7.1	2.2	7.5	252.
10.0	1538.	3626.	8.4	3.0	4.0	251.
10.5	1614.	3702.	7.2	5.4	6.5	245.
11.0	1690.	3778.	8.5	4.5	6.0	235.
11.5	1767.	3855.	8.5	5.1	5.5	220.
12.0	1843.	3931.	7.5	5.5	9.1	255.

theodolite position #2

COL CO TRACT ELEV 2088 METERS SOUNDING ID 40853

DATE 11/11/77 TIME 14:54:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT F (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/I STD	D/I SOND	D/I LAPSE	SP M/S	DI DEG
	SFC		9.05		5.9		5.1	240.
0.9	150.	2238.	7.57	-1.80	-2.14	0.70	4.4	191.
1.9	331.	2308.	6.88	-2.71	-2.21	0.75	5.3	184.
2.6	812.	2500.	5.74	-0.95	-1.80	1.09	5.3	170.
3.2	525.	2538.	5.05	-1.29	-2.15	0.90	5.4	164.
5.9	912.	3000.	2.73	-2.91	-2.42	0.51	4.8	165.
12.4	1912.	4000.	-5.17	-5.51	-2.65	0.29		
18.9	2912.	5000.	-8.47	-5.30	-5.64	-0.71		
25.2	3912.	6000.	-14.25	-7.71	-5.32	-0.09		

COL CO TRACT ELEV 2088 METERS SOUNDING ID 40853

DATE 11/11/77 TIME 14:54:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT F (AGL)	HEIGHT M (MSL)	WIND P M/S	WIND P M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2088.	2.7	1.5	5.1	240.
0.5	75.	2113.	0.7	5.0	4.5	65.
1.4	100.	2254.	-1.1	5.1	5.1	173.
1.5	265.	2351.	-1.5	4.5	4.5	180.
2.0	319.	2407.	-2.0	4.9	5.0	150.
2.5	545.	2486.	-1.5	5.5	5.5	175.
3.0	671.	2554.	0.7	5.5	5.5	180.
3.5	797.	2585.	-0.5	5.6	5.6	174.
4.0	824.	2712.	-1.4	5.1	5.3	165.
4.5	750.	2750.	-1.0	4.5	4.5	182.
5.0	770.	2808.	-1.1	5.1	5.0	185.
5.5	852.	2941.	1.4	5.7	5.6	174.
6.0	928.	3016.	1.4	4.9	5.1	190.
6.5	1065.	3093.	1.5	4.7	4.9	195.
7.0	1181.	3169.	1.7	4.8	5.1	199.
7.5	1157.	3245.	3.3	4.4	5.4	214.
8.0	1233.	3321.	3.9	4.0	5.6	224.
8.5	1309.	3397.	4.2	4.8	5.4	221.
9.0	1386.	3474.	5.9	5.9	7.1	237.
9.5	1462.	3550.	7.2	2.5	7.5	255.
10.0	1538.	3626.	8.6	2.9	9.3	252.
10.5	1614.	3702.	8.0	3.9	8.9	244.
11.0	1691.	3778.	7.8	5.2	9.3	250.
11.5	1767.	3855.	7.3	5.1	8.9	233.
12.0	1843.	3931.	6.1	6.2	8.7	225.

CUL CB IRACI ELEV 2000 METERS SOUNDING ID 9991

DATE 11/14/77 TIME 18:07 GI ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/I STD	D/I SOUND	D/I LAPSE	WS M/S	WD DEG
	SFC		-1.17		0.0			
0.9	150.	2250.	-3.03	-1.86	-3.79	-0.85	1.2	189.
1.3	300.	2300.	-4.99	-1.57	-1.71	1.21	1.9	70.
2.5	412.	2500.	-4.83	-0.28	-0.19	2.74	2.0	85.
3.1	569.	2506.	-4.83	0.01	-1.14	1.78	3.7	305.
5.3	* 859	2947	-7.98		-0.19	2.74		
5.8	912.	3000.	-8.29	-2.55	3.29	0.19	7.4	27.
6.3	*1012	3100	-5.69		1.72	0.65		
11.8	1912.	4000.	-13.05	-5.60	-4.08	-1.76	12.8	305.
17.0	2912.	5000.	-21.05	-8.79	-2.78	0.15		
23.0	3912.	6000.	-28.97	-7.52	-4.03	-1.59		

CUL CB IRAC ELEV 2000 METERS SOUNDING ID 9991

DATE 11/14/77 TIME 18:07MGT ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
			THE WIND DATA ARE MISSING			
0.5	78.	2184.	0.0	0.0	0.0	270.
1.0	172.	2280.	-0.1	1.3	1.3	185.
1.5	259.	2367.	-0.2	0.2	1.3	170.
2.0	355.	2423.	-0.7	-0.5	0.9	50.
2.5	411.	2499.	-1.5	-1.5	2.0	41.
3.0	488.	2576.	0.4	-0.3	0.5	305.
3.5	566.	2654.	1.0	-0.0	1.7	292.
4.0	644.	2728.	1.0	-0.0	1.7	290.
4.5	724.	2812.	3.7	-1.3	3.7	290.
5.0	822.	2910.	5.3	-0.5	5.3	276.
5.5	898.	2986.	7.0	0.1	7.0	271.
6.0	974.	3062.	9.1	-0.0	9.2	274.
6.5	1050.	3138.	7.8	-0.2	7.8	272.
7.0	1126.	3214.	7.7	-0.3	7.7	272.
7.5	1203.	3291.	7.2	-1.0	7.3	278.
8.0	1279.	3367.	9.1	-2.7	9.5	287.
8.5	1355.	3443.	7.9	-2.9	8.0	291.
9.0	1431.	3519.	6.0	-4.1	8.4	310.
9.5	1507.	3595.	5.5	-4.7	7.1	312.
10.0	1583.	3671.	7.1	-5.1	11.1	317.
10.5	1660.	3772.	7.5	-7.2	10.5	315.
11.0	1760.	3848.	8.3	-7.0	10.9	310.
11.5	1852.	3943.	10.7	-7.7	13.2	309.
12.0	1965.	4053.	10.8	-6.2	12.5	300.
12.5	2079.	4102.	11.5	-6.5	13.1	300.
13.0	2166.	4250.	10.9	-6.0	12.9	302.

COL CH TRACT FLEV 2000 METERS SOUNDING TO 4992

DATE 11/14/77 TIME 1514/MST ASCENT RATE 500 FPM DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/I M/S	V/I M/S	T/I M/S	WS M/S	WD DEG
	SFC		10.25		0.0		3.1	320.
0.0	15.	2015.	7.35	-2.10	-0.02	-1.09	0.0	55.
1.0	500	2500	0.00	-1.51	-2.81	0.52	4.1	330.
2.2	812.	2812.	5.11	-0.65	-3.10	-0.25	2.5	352.
3.0	500	2500	4.21	-1.17	-4.00	-1.75	2.0	317.
5.0	812.	2812.	1.72	-3.15	-5.21	-0.78	2.0	295.
11.5	1712.	4000.	-5.31	-0.55	-1.91	1.02	10.0	291.
17.5	2912.	5012.	-11.04	-0.10	-3.90	-0.47		
23.0	3912.	6012.	-10.05	-1.21	-3.70	-1.03		

COL CH TRACT FLEV 2000 METERS SOUNDING TO 4992

DATE 11/14/77 TIME 1514/MST ASCENT RATE 500 FPM DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U/S M/S	V/S M/S	WS BREEV M/S	WD DEG
0.0	1.	2000.	2.0	-2.4	3.1	320.
0.5	78.	2078.	1.4	-3.2	3.7	325.
1.0	202.	2202.	2.0	-4.0	5.0	330.
1.5	390.	2390.	1.0	-3.7	4.1	335.
2.0	581.	2049.	1.2	-2.7	3.0	337.
2.5	457.	2345.	1.1	-1.3	1.3	320.
3.0	537.	2025.	3.0	-1.4	3.3	298.
3.5	651.	2737.	2.7	-1.0	2.9	290.
4.0	755.	2805.	2.4	-1.1	2.7	294.
4.5	856.	2906.	2.1	-0.1	2.1	267.
5.0	915.	3003.	2.4	0.3	2.4	283.
5.5	1000.	3078.	2.9	1.5	3.3	295.
6.0	1047.	3185.	3.4	1.9	3.8	297.
6.5	1173.	3303.	3.7	3.1	5.4	227.
7.0	1250.	3330.	7.1	3.6	7.9	244.
7.5	1360.	3410.	0.3	2.1	0.1	252.
8.0	1402.	3400.	0.3	0.9	0.1	264.
8.5	1478.	3500.	7.0	-0.3	7.0	268.
9.0	1554.	3042.	6.9	-0.5	6.9	272.
9.5	1651.	3717.	6.9	-1.0	0.1	274.
10.0	1707.	3795.	0.1	-1.2	0.2	281.
10.5	1753.	3871.	2.2	-2.4	3.5	285.
11.0	1854.	3907.	10.0	-3.0	10.0	290.
11.5	1950.	4025.	10.1	-3.7	10.1	291.
12.0	2012.	4100.	9.5	-4.3	9.5	297.

[illegible] [illegible]

[illegible] [illegible] [illegible]

DATE 11/15/77 [illegible] [illegible] DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	[illegible] M/S	[illegible] M/S	[illegible] M/S	[illegible] M/S	[illegible] DEG
	SFC		[illegible]	[illegible]	[illegible]		
1.7	152.	2252.	[illegible]	[illegible]	[illegible]	1.25	[illegible]
1.9	* 220.	2319.	[illegible]	[illegible]	[illegible]	3.01	
2.2	305.	2405.	[illegible]	[illegible]	[illegible]	3.11	[illegible]
2.7	418.	2518.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3.2	533.	2633.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5.0	716.	3016.	[illegible]	[illegible]	[illegible]	2.55	[illegible]
12.8	1912.	[illegible]	[illegible]	[illegible]	[illegible]	1.51	[illegible]
18.4	2712.	[illegible]	[illegible]	[illegible]	[illegible]	0.77	
25.5	3712.	[illegible]	[illegible]	[illegible]	[illegible]	0.56	

[illegible] [illegible] [illegible]

DATE 11/15/77 [illegible] [illegible] DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	[illegible] M/S	[illegible] M/S	[illegible] M/S	[illegible] DEG
0.0	0.	2490.	[illegible]	2.0	2.6	180.
0.5	76.	2566.	[illegible]	2.0	2.9	184.
1.0	152.	2642.	0.1	2.5	6.7	200.
1.5	229.	2719.	1.2	1.1	1.5	220.
2.0	305.	2795.	[illegible]	[illegible]	1.1	245.
2.5	381.	2869.	[illegible]	[illegible]	1.3	222.
3.0	462.	2959.	[illegible]	2.7	2.1	111.
3.5	559.	3066.	[illegible]	3.5	5.7	169.
4.0	654.	3162.	[illegible]	3.5	3.7	181.
4.5	711.	3219.	[illegible]	3.8	3.8	181.
5.0	767.	3275.	2.2	[illegible]	3.2	200.
5.5	843.	3351.	4.3	3.8	4.9	214.
6.0	938.	3447.	[illegible]	4.1	4.8	205.
6.5	1013.	3523.	5.6	[illegible]	5.6	212.
7.0	1092.	3602.	5.2	[illegible]	5.4	205.
7.5	1168.	3678.	4.7	[illegible]	5.6	201.
8.0	1244.	3754.	[illegible]	[illegible]	5.5	203.
8.5	1321.	3830.	2.1	[illegible]	7.1	209.
9.0	1397.	3906.	0.6	[illegible]	8.1	212.
9.5	1473.	3981.	[illegible]	[illegible]	8.8	205.
10.0	1549.	4057.	[illegible]	[illegible]	5.2	213.
10.5	1625.	4133.	5.5	[illegible]	8.8	213.
11.0	1701.	4209.	5.1	[illegible]	5.8	3[illegible]
11.5	1777.	4285.	[illegible]	[illegible]	5.5	207.
12.0	1853.	4362.	[illegible]	[illegible]	5.0	[illegible]
12.5	1930.	4438.	5.5	[illegible]	8.4	209.
13.0	2006.	[illegible]	[illegible]	[illegible]	7.5	213.
13.5	2082.	4170.	9.0	[illegible]	11.5	208.
14.0	2158.	[illegible]	[illegible]	[illegible]	13.5	3[illegible]
14.5	2235.	4323.	12.1	[illegible]	14.1	201.

DATE 11/15/77 TIME 15:00:01 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/I SIG	D/I SUBM	D/I LAPSE	WS M/S	WD DEG
	SFC		0.07		0.0		2.0	100.
0.0	157	2238.	4.03	-2.05	-4.03	-1.40	4.1	324.
1.0	300	2380	3.20	-1.03	-4.44	-1.57	5.0	320.
2.0	412.	2500.	2.24	-0.95	-4.40	-1.57	5.9	321.
2.3	500	2588	1.72	-1.23	-5.43	-2.33	5.4	323.
3.7	412.	3077.	-3.72	-5.71	-5.15	-2.22	3.0	344.
9.0	1412.	14000.	-7.40	-0.14	-0.97	1.40	12.2	240.
15.0	2912.	5000.	-15.04	-0.15	-2.74	0.17		

DATE 11/15/77 TIME 15:00:01 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2080.	-3.6	2.0	4.0	100.
0.5	78.	2164.	1.7	-2.9	3.3	329.
1.0	182.	2274.	2.3	-3.0	3.3	324.
1.5	293.	2391.	2.0	-3.0	3.6	320.
2.0	419.	2507.	2.1	-3.3	3.9	329.
2.5	545.	2633.	2.0	-2.4	3.2	321.
3.0	665.	2771.	1.8	-2.6	4.7	341.
3.5	844.	2937.	1.9	-3.1	3.4	329.
4.0	1001.	3084.	3.0	-2.9	0.5	291.
4.5	1137.	3225.	3.2	-2.4	4.6	286.
5.0	1277.	3362.	4.1	-2.5	4.5	291.
5.5	1385.	3471.	4.2	-1.1	4.3	278.
6.0	1480.	3548.	3.1	-1.4	3.2	279.
6.5	1558.	3624.	3.5	-1.1	3.6	277.
7.0	1612.	3700.	1.6	-3.0	10.6	297.
7.5	1688.	3778.	3.5	-3.5	10.9	299.
8.0	1764.	3852.	7.3	-3.9	11.3	301.
8.5	1841.	3929.	11.0	-3.8	12.4	298.
9.0	1917.	4003.	10.3	-3.4	12.2	298.
9.5	1993.	4081.	13.8	-2.5	10.4	305.
10.0	2069.	4157.	12.2	-10.1	15.0	310.
10.5	2145.	4233.	12.1	-10.1	15.8	310.
11.0	2222.	4310.	14.4	-13.7	19.8	314.
11.5	2298.	4386.	15.2	-10.5	20.1	310.
12.0	2374.	4462.	17.1	-10.2	23.0	314.

COL CO INACT ELEV 2000 METERS SOUNDING TO 4705

DATE 11/10/77 TIME 00:25:51 ASCENT RATE 500 FPM DATA INTERVAL IS SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/I STD	U/I SMOM	U/I LAPSE	WS M/S	WD DEG
	SFC		6.00		0.0		6.0	270.
0.0	* 114	6202	5.00		-0.57	5.50		
1.0	150	6250	3.70	0.00	-0.50	6.37	4.1	260.
2.0	500	6598	2.75	-0.05	-2.43	-0.49	-11.5	259.
2.0	912.	16500.	1.37	-1.50	-3.70	-0.80	10.4	260.
3.1	? 500	25*8	0.05	-0.72	-1.89	1.00	12.5	267.
5.7	912.	13000.	-1.70	-6.42	-1.97	1.05	10.4	265.
11.5	1912.	24000.	-10.05	-8.29	-5.89	-0.97	21.7	501.

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COL CO INACT ELEV 2000 METERS SOUNDING TO 4705

DATE 11/10/77 TIME 00:25:51 ASCENT RATE 500 FPM DATA INTERVAL IS SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2000.	6.0	0.0	6.0	270.
0.5	75.	2104.	2.2	-0.1	2.2	274.
1.0	152.	2200.	0.0	0.0	0.0	000.
1.5	228.	2317.	0.0	0.0	0.0	245.
2.0	305.	2395.	11.0	0.1	11.0	269.
2.5	381.	2479.	10.0	0.7	10.0	266.
3.0	466.	2574.	11.4	0.0	11.4	267.
3.5	572.	2694.	13.4	-1.1	13.9	274.
4.0	648.	2730.	13.7	-1.5	13.8	275.
4.5	724.	2812.	13.2	-2.1	13.3	279.
5.0	801.	2889.	13.7	-2.0	14.0	274.
5.5	877.	2965.	13.6	-4.1	14.1	284.
6.0	955.	3041.	13.9	-4.5	13.6	287.
6.5	-1029.	3117.	12.0	-4.5	12.8	290.
7.0	1105.	3193.	9.1	-7.5	11.0	310.
7.5	1181.	3269.	9.5	-2.9	9.9	287.
8.0	1258.	3346.	10.5	-4.9	11.0	295.
8.5	1365.	3451.	14.0	-7.7	16.0	299.
9.0	1477.	3558.	14.5	-7.0	16.5	299.
9.5	1568.	3650.	16.1	-8.9	18.9	302.
10.0	1650.	3744.	12.7	-10.5	16.5	309.
10.5	1732.	3820.	14.7	-9.1	16.4	304.
11.0	1840.	3928.	16.5	-11.1	17.6	302.
11.5	1911.	3999.	18.7	-11.0	21.7	301.
12.0	2022.	4110.	22.4	-15.5	26.0	301.

theodolite position #2

COL CO INACT — ELEV 2000 METERS — SOUNDING ID 4905

DATE 11/10/77 — TIME 08:25MST — ASCENT RATE 500 FPM — DATA INTERVAL 10 SEC.

TIME MIN	HEIGHT m (AGL)	HEIGHT m (MSL)	TEMP DEG C	U/I m/s	V/I m/s	W/I LAPSE	RS m/s	DEG
	SFC		2.00		0.0		2.0	CLM.
0.5	* 110	2202	3.00		-0.59	3.50		
1.0	150	2250	3.10	0.00	-0.30	2.51	4.0	301.
2.0	300	2388	2.75	-0.95	-2.03	0.09	1.0	27.
2.9	412.	2500.	1.97	-1.30	-3.10	-0.08	4.0	205.
3.1	* 500	2588	0.05	-0.72	-1.49	1.08	10.1	274.
5.1	912.	2900.	-1.10	-2.42	-1.90	1.03	17.1	284.
11.5	1912.	3900.	-10.15	-3.29	-3.89	-0.97	24.0	305.

COL CO INACT — ELEV 2000 METERS — SOUNDING ID 4905

DATE 11/10/77 — TIME 08:25MST — ASCENT RATE 500 FPM — DATA INTERVAL 10 SEC.

TIME MIN	HEIGHT m (AGL)	HEIGHT m (MSL)	U-COMP m/s	V-COMP m/s	WND SPEED m/s	WND DIR DEG
0.0	0.	2000.	2.0	0.0	2.0	CLM.
0.5	70.	2100.	23.7	8.2	24.0	284.
1.0	152.	2202.	3.5	-2.2	4.2	303.
1.5	220.	2317.	4.0	-2.5	5.4	244.
2.0	305.	2395.	7.1	-0.2	7.1	271.
2.5	391.	2479.	0.2	1.0	0.5	259.
3.0	446.	2576.	4.4	-4.1	14.4	311.
3.5	572.	2600.	0.3	-3.2	0.0	280.
4.0	648.	2730.	12.9	4.2	13.1	20m.
4.5	724.	2816.	12.0	-1.8	12.7	278.
5.0	801.	2804.	10.4	-3.3	10.7	282.
5.5	877.	2965.	10.3	-3.9	14.7	281.
6.0	953.	3041.	10.4	-5.0	14.7	207.
6.5	1029.	3117.	13.5	-4.7	14.3	289.
7.0	1105.	3193.	10.3	-4.3	11.3	293.
7.5	1181.	3269.	8.2	-5.1	9.6	301.
8.0	1256.	3346.	8.8	-8.3	10.2	309.
8.5	1365.	3451.	14.2	-7.6	15.9	298.
9.0	1470.	3556.	13.4	-9.4	16.4	301.
9.5	1588.	3674.	14.5	-12.7	19.3	311.
10.0	1650.	3744.	14.3	-8.5	16.0	301.
10.5	1732.	3826.	15.5	-8.8	16.2	304.
11.0	1808.	3902.	16.7	-8.8	17.4	305.
11.5	1911.	4000.	21.2	-12.9	25.9	305.
12.0	2022.	4110.	22.3	-14.7	26.4	305.
12.5	2114.	4202.	19.3	-13.8	23.5	305.
13.0	2194.	4278.	18.4	-13.4	22.7	305.

CAL-LID FINAL — ELEV 2000 METERS — SOUNDING TO 5000

DATE 11/10/77 TIME INITIATED 01 AGLEVEL WAIT 500 FEET DATA INTERVAL IS SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/E M/S	V/N M/S	U/V M/S	M/S	DEG
	SFC		12.32		0.0		0.1	200.
0.7	157	2257	9.88	-2.51	-6.98	-5.73	1.7	210.
1.1	300	2500	7.14	-1.01	-5.72	-0.14	13.7	214.
1.5	412.	2500.	5.79	-0.64	-5.17	-0.25	10.1	21 .
2.0	300	2500	5.52	-0.57	-4.51	-1.50	13.5	207.
9.7	412.	3000.	2.24	-4.32	-5.54	-2.57	12.7	271.
9.7	1412.	4000.	-7.07	-4.21	-2.12	0.20	11.0	202.
10.1	2412.	5000.	-15.45	-8.34	-1.59	1.50		

CAL-LID FINAL — ELEV 2000 METERS — SOUNDING TO 5000

DATE 11/10/77 TIME INITIATED 01 AGLEVEL WAIT 500 FEET DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	W-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2000.	0.1	-0.7	0.1	200.
0.5	78.	2104.	4.5	-0.5	4.5	276.
1.0	200.	2550.	12.7	-1.2	12.8	270.
1.5	412.	2500.	13.7	-1.1	13.7	271.
2.0	497.	2555.	13.4	0.1	13.4	269.
2.5	575.	2605.	11.0	-0.0	11.0	271.
3.0	845.	2780.	13.1	-0.3	13.1	269.
3.5	902.	2841.	12.8	-0.4	12.8	272.
4.0	911.	2905.	12.1	-0.3	12.1	271.
4.5	1005.	3155.	14.8	-1.7	14.8	273.
5.0	1134.	3226.	15.4	-1.2	15.4	274.
5.5	1210.	3250.	11.0	-2.2	11.1	282.
6.0	1290.	3370.	15.7	-2.4	15.9	280.
6.5	1385.	3473.	16.2	-0.4	16.8	285.
7.0	1465.	3555.	16.4	-3.5	17.1	282.
7.5	1551.	3634.	17.7	-4.0	18.1	283.
8.0	1020.	3710.	17.0	-3.5	17.9	281.
8.5	1712.	3800.	13.0	-2.2	15.2	280.
9.0	1795.	3881.	12.0	-3.1	15.4	282.
9.5	1874.	3964.	11.1	-2.2	11.3	281.
10.0	1962.	4050.	11.0	-2.0	11.9	284.
10.5	2040.	4120.	12.2	-3.0	13.2	282.
11.0	2125.	4211.	13.1	-4.4	14.0	284.
11.5	2205.	4295.	12.9	-4.8	13.5	284.
12.0	2290.	4370.	13.0	-4.3	10.0	305.

theodolite position #2

CUL CO INACT — ELEV ZONE METERS — SOUNDING IO 3104

DATE 11/10/77 TIME 14:10MST ABLEVI RATE 500 FPM DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/I M/S	V/I M/S	W/I M/S	WS M/S	WD DEG
	SFC		12.32		0.0		4.1	20.
0.7	150	2235.	4.00	-2.01	-6.06	-5.73	35.0	145.
1.1	300	2380	7.19	-1.01	-5.72	-0.79	6.4	07.
1.9	612.	2580.	5.79	-0.85	-5.17	-0.25	14.0	45.
2.0	900	2580	0.52	-0.57	-4.31	-1.50	10.0	205.
4.7	912.	3075.	2.27	-0.32	-5.30	-2.57	11.-	20+.
5.7	1912.	40000.	-1.07	-4.27	-2.72	0.20	11.0	200.
10.9	2912.	5000.	-15.45	-0.35	-1.59	1.31		

CUL CO INACT — ELEV ZONE METERS — SOUNDING IO 3104

DATE 11/10/77 — TIME 14:10MST — ABLEVI RATE 500 FPM — DATA INTERVAL IS SEC.

TIME	HEIGHT (AGL)	HEIGHT (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.2	0.	2080.	4.1	-0.1	4.1	280.
0.5	75.	2155.	53.2	13.9	54.5	254.
1.0	200.	2280.	-0.1	-2.9	0.7	03.
1.5	412.	2500.	-4.7	-14.0	15.9	44.
2.0	712.	2800.	10.0	1.4	10.0	205.
2.5	575.	2665.	12.0	1.5	12.1	205.
3.0	562.	2650.	11.3	1.5	11.4	206.
3.5	862.	2950.	12.4	-3.5	12.9	285.
4.0	717.	3005.	10.5	1.4	10.9	200.
4.5	1045.	3135.	14.0	-1.7	14.1	277.
5.0	1150.	3240.	11.0	-0.5	11.0	273.
5.5	1210.	3300.	11.8	-2.5	12.1	282.
6.0	1290.	3380.	13.3	-3.0	14.1	285.
6.5	1385.	3475.	17.4	-3.8	17.8	283.
7.0	1405.	3555.	18.3	-3.0	18.1	283.
7.5	1551.	3635.	18.1	-3.5	18.6	283.
8.0	1620.	3710.	17.3	-3.0	17.6	282.
8.5	1712.	3800.	15.5	-3.5	15.7	282.
9.0	1795.	3841.	12.6	-3.0	12.8	284.
9.5	1878.	3968.	11.8	-1.0	11.9	277.
10.0	1962.	4050.	10.6	-5.1	11.7	294.
10.5	2040.	4128.	14.2	-4.9	15.0	289.
11.0	2125.	4211.	15.1	-0.1	16.0	270.

COL CO TRACT — ELEV 2000 METERS — SOUNDING ID

DATE 11/17/77 — TIME 00:21MST — ASCENT RATE 500 FPM — DATA INTERVAL 10 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT (MSL)	TEMP DEG C	U/I	V/I	W/I	FS M/S	DIR DEG
	0FT							
1.0	154.	2254.					1.5	211.
1.5	500	2348.					0.4	121.
2.0	412.	2502.					5.0	203.
2.5	300	2586					5.0	251.
3.0	912.	3000.					15.2	205.

COL CO TRACT — ELEV 2000 METERS — SOUNDING ID

DATE 11/17/77 — TIME 00:21:01 — ASCENT RATE 500 FPM — DATA INTERVAL 10 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
			THE WIND DATA ARE INCORRECT			
0.5	70.	2104.	0.1	0.5	0.7	194.
1.0	152.	2246.	0.7	1.1	1.5	212.
1.5	229.	2317.	-0.9	1.1	1.5	155.
2.0	305.	2393.	-0.3	0.2	0.4	114.
2.5	381.	2484.	-5.1	-0.4	5.1	271.
3.0	457.	2565.	3.4	1.9	4.3	244.
3.5	533.	2621.	6.4	1.5	6.5	257.
4.0	610.	2698.	10.3	0.4	10.3	268.
4.5	686.	2774.	11.5	-2.2	11.6	271.
5.0	762.	2850.	10.1	3.2	10.3	286.
5.5	838.	2926.	11.3	1.4	11.4	285.
6.0	914.	3002.	13.2	1.7	13.3	283.
6.5	991.	3078.	13.5	2.0	13.8	285.
7.0	1067.	3155.	13.8	2.2	13.8	286.
7.5	1143.	3231.	14.1	1.7	14.2	285.
8.0	1219.	3307.	13.2	1.3	13.3	285.
8.5	1295.	3383.	12.4	1.7	12.4	286.
9.0	1372.	3460.	12.2	0.1	12.2	270.
9.5	1448.	3536.	21.1	-1.6	21.1	270.
10.0	1524.	3612.	10.2	-1.5	10.3	275.
10.5	1600.	3688.	10.2	-1.5	10.2	276.
11.0	1676.	3764.	10.6	-1.5	10.6	275.
11.5	1753.	3841.	10.0	-0.4	10.0	271.
12.0	1829.	3917.	2.0	-0.2	2.0	276.

theodolite position #2

TIME min	HEIGHT m (AGL)	HEIGHT m (MSL)	DEG C	U/I	V/I	W/I	m/s	DEG
	SFC							
1.0	150.	2237.					1.0	145.
2.0	300	2380					2.0	223.
2.7	412.	2500.					3.0	159.
3.5	500	2580					4.1	271.
4.0	412.	2500.					11.2	252.

TIME min	HEIGHT m (AGL)	HEIGHT m (MSL)	U m/s	V m/s	WND SPEED m/s	WND DIR deg
1.5	70.	2140.	0.3	2.0	14.2	254.
1.0	150.	2220.	0.0	0.7	0.7	101.
1.5	220.	2317.	-0.4	1.1	1.1	159.
2.0	305.	2345.	2.0	1.0	2.1	224.
2.5	381.	2404.	-2.4	-0.5	2.5	78.
3.0	451.	2515.	3.0	-0.2	3.0	274.
3.5	533.	2521.	4.4	0.0	4.4	270.
4.0	610.	2600.	4.4	-0.5	4.4	269.
4.5	690.	2174.	7.1	-16.1	16.1	345.
5.0	702.	2205.	10.7	-0.6	17.0	304.
5.5	838.	2920.	17.1	1.5	17.1	295.
6.0	910.	3002.	15.4	-6.7	17.2	291.
6.5	991.	3074.	5.0	-16.5	17.2	197.
7.0	1007.	3155.	14.1	1.0	14.2	265.
7.5	1145.	3231.	15.0	1.0	15.0	264.
8.0	1214.	3307.	14.9	2.2	15.1	261.
8.5	1295.	3385.	15.1	1.1	15.3	264.
9.0	1372.	3460.	17.4	1.1	17.5	265.
9.5	1444.	3534.	15.9	1.2	16.0	266.
10.0	1524.	3612.	10.0	-4.6	10.4	247.
10.5	1600.	3688.	-18.2	-6.8	19.4	271.
11.0	1670.	3764.	19.7	-6.1	18.9	271.
11.5	1755.	3841.	20.5	-5.1	20.4	270.

COL CO TRACT — ELEV ZERO METERS — SOUNDING ID 2

DATE 11/17/77 TIME 14:20:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME min	HEIGHT m (AGL)	HEIGHT m (MSL)	TEMP DEG C	DIV	ZONE	LAPSE	WS m/s	WD DEG
	SFC		1.29		0.0		1.5	10.
1.0	150	2250	0.18	-1.11	-4.00	-1.11	8.1	340.
1.0	300	2500	4.51	-1.07	-1.75	1.76	10.3	330.
2.1	412.	2509.	3.08	-1.29	-2.81	0.52	9.0	215.
3.1	500	2550	2.70	-0.32	-1.00	1.01	9.2	225.
5.0	612.	3012.	0.55	-2.50	-1.88	1.24	5.8	231.
11.0	1412.	4012.	-7.45	-0.49	-3.40	-0.55	13.4	201.
15.3	+2554	4854	-15.90		-4.19	2.75		
17.0	2412.	5012.	-16.21	-4.55	-0.54	3.32		
25.2	3012.	5612.	-19.48	-7.57	-5.25	-5.00		

DATE 11/17/77 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME min	HEIGHT m (AGL)	HEIGHT m (MSL)	TEMP C	DIV	ZONE	WS m/s	WD deg
0.0	0.	2100.	-1.00	-1.5	1.5	10.0	
0.5	75.	2175.	1.1	-4.1	4.1	14.1	
1.0	150.	2250.	2.0	-1.1	0.5	13.0	
1.5	240.	2340.	0.7	0.7	10.8	200.	
2.0	321.	2415.	-0.5	-0.1	10.1	205.	
2.5	400.	2492.	5.5	7.9	9.7	215.	
3.0	480.	2580.	0.1	1.0	9.0	220.	
3.5	550.	2650.	5.0	5.0	8.1	232.	
4.0	632.	2732.	0.0	3.0	8.7	240.	
4.5	705.	2805.	7.4	2.5	8.2	254.	
5.0	765.	2865.	5.4	2.0	8.3	249.	
5.5	801.	2901.	5.7	0.5	5.7	205.	
6.0	851.	2951.	5.2	1.0	5.3	259.	
6.5	1015.	3115.	5.1	-0.2	5.1	272.	
7.0	1084.	3177.	4.7	0.4	4.7	205.	
7.5	1150.	3250.	4.5	0.1	4.5	208.	
8.0	1242.	3342.	4.5	0.0	4.5	205.	
8.5	1314.	3414.	4.1	-0.1	4.1	271.	
9.0	1417.	3495.	4.0	0.6	4.1	200.	
9.5	1520.	3608.	10.0	1.7	10.1	201.	
10.0	1604.	3692.	9.0	1.2	9.0	205.	
10.5	1680.	3772.	10.0	1.5	10.1	201.	
11.0	1705.	3753.	10.7	1.5	10.0	205.	
11.5	1850.	3950.	12.5	1.5	12.4	205.	
12.0	1945.	4055.	14.0	0.5	14.0	204.	

theodolite position #2

[illegible] ON IMPACT [illegible] FLEV 2000 METERS [illegible]

DATE 11/17/77 TIME 14:20MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	[illegible] DEG C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	SFC		1.29		0.0		1.5	SW
1.0	197	2253	0.14	-1.11	-9.0	-1.11	1.7	127.
1.5	300	2300	0.51	-1.07	-1.05	1.00	4.1	105.
2.0	412.	2412.	1.08	-1.29	-2.31	0.52	9.1	220.
3.1	500	2500	2.40	-0.56	-1.00	1.07	9.9	220.
5.0	912.	2912.	-0.55	-2.50	-1.50	1.20	5.6	259.
11.0	1912.	3912.	-7.55	-0.45	-5.40	-0.55	10.9	201.
15.5	*2558	3558	-13.96		-9.19	2.75		
17.0	2712.	3712.	-16.21	-0.55	0.59	3.52		
23.2	3412.	4412.	-19.24	-7.57	-5.95	-5.[illegible]		

[illegible] ON IMPACT [illegible] FLEV 2000 METERS [illegible]

DATE 11/17/77 [illegible] ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	[illegible] /S	[illegible] /S	[illegible] /S	[illegible] DEG
0.0	0.	2000.	0.0	-1.5	-1.5	300.
0.5	76.	2100.	14.5	-0.4	14.5	25.
1.0	152.	2200.	-0.1	2.0	1.9	125.
1.5	240.	2330.	-0.5	0.5	10.5	145.
2.0	327.	2415.	-1.0	0.2	9.3	174.
2.5	400.	2482.	-0.5	0.2	9.4	220.
3.0	480.	2508.	0.5	0.0	9.5	224.
3.5	556.	2640.	0.2	5.5	11.5	241.
4.0	632.	2720.	0.0	0.0	0.6	244.
4.5	708.	2700.	5.4	1.5	5.6	250.
5.0	785.	2673.	0.1	2.2	0.5	231.
5.5	861.	2940.	0.0	1.2	0.1	254.
6.0	937.	3025.	5.6	1.1	5.7	254.
6.5	1013.	3101.	0.5	-0.1	4.5	271.
7.0	1089.	3177.	5.5	1.2	5.0	230.
7.5	1165.	3254.	0.0	-0.1	5.0	270.
8.0	1242.	3330.	5.0	0.1	5.0	245.
8.5	1318.	3406.	7.5	-0.1	7.5	271.
9.0	1467.	3493.	0.0	0.5	0.0	200.
9.5	1520.	3600.	10.5	1.5	10.5	265.
10.0	1596.	3676.	0.5	1.1	9.7	260.
10.5	1684.	3772.	14.5	1.0	10.4	265.
11.0	1765.	3853.	10.0	0.0	10.1	260.
11.5	1850.	3938.	12.0	1.1	12.9	262.
12.0	1945.	4033.	12.1	0.5	12.1	260.
12.5	2037.	4125.	16.9	5.1	17.2	264.
13.0	2145.	4231.	17.1	1.0	17.2	265.

COL CO TRACT ELEV 2000 METERS SOUNDING TO 5000

DATE 11/10/77 TIME 08:30MST ASCENT RATE 500 FPM DATA INTERVAL IS SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/I S10	U/I 300M	U/I LAPSE	S M/S	DEG
	SFC		-0.15		0.0		2.1	340
1.0	150	2250	-0.99	-1.48	-1.01	1.03	3.5	350
2.0	300	2300	-2.05	-1.00	-1.90	1.03	1.0	329
2.7	412.	2500.	-3.02	-0.77	-1.91	1.02	2.8	234
3.3	500	2500	-5.89	-0.87	-2.27	0.84	4.2	221
5.1	912.	3000.	-7.12	-3.03	-2.32	0.81	M	M
11.0	1912.	4000.	-15.03	-0.51	-6.20	0.50	M	M
17.5	2912.	5000.	-24.83	-9.20	-2.91	0.32		

COL CO TRACT ELEV 2000 METERS SOUNDING TO 5000

DATE 11/10/77 TIME 08:30MST ASCENT RATE 500 FPM DATA INTERVAL IS SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2000.	0.7	-1.4	2.1	340.
0.5	76.	2038.	1.4	-2.9	3.3	334.
1.0	152.	2076.	1.2	-3.3	3.5	340.
1.5	228.	2114.	-0.2	-2.8	2.8	5.
2.0	305.	2153.	0.1	-0.4	0.4	350.
2.5	381.	2191.	2.1	0.4	2.1	280.
3.0	457.	2229.	2.0	-2.3	3.0	220.
3.5	533.	2267.	3.3	-3.1	4.7	224.
4.0	610.	2305.	3.1	0.9	3.2	210.
4.5	686.	2343.	3.9	3.8	5.4	225.

COL CO TRACT ELEV 2000 METERS SOUNDING TO 3000

DATE 11/18/77 TIME 15:02:31 ASCENT RATE 500 FPM DATA INTERVAL IS SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	DPT DEG	U/I 5000	V/I LAMDA	S M/S	DEG
	SFC		5.52		0.0		7.0	220
0.7	150	2250	5.02	-1.44	-5.72	-0.19	13.0	212
1.5	500	2500	1.04	-1.19	-3.01	-0.01	13.0	209
2.3	812.	2500.	-.92	-2.64	-2.76	.80	12.7	210
2.7	500	2550	0.01	-3.39	-1.15	1.60	12.1	222
5.2	912.	3000.	-3.50	-5.09	-2.89	-0.17	10.5	207
10.0	1912.	4000.	-13.03	-4.80	-3.52	-0.59	22.5	209
10.2	2912.	5000.	-19.15	-6.51	-.99	1.99		

COL CO TRACT ELEV 2000 METERS SOUNDING TO 3000

DATE 11/18/77 TIME 15:02:31 ASCENT RATE 500 FPM DATA INTERVAL IS SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	2000.	5.0	5.0	8.0	220.
0.5	70.	2104.	6.4	8.1	10.5	218.
1.0	170.	2200.	7.4	12.6	14.0	210.
1.5	277.	2305.	5.9	12.1	13.5	206.
2.0	307.	2455.	6.2	11.1	13.0	210.
2.5	443.	2531.	7.3	9.5	11.9	218.
3.0	520.	2600.	8.9	9.4	13.0	223.
3.5	590.	2664.	10.4	9.1	13.8	229.
4.0	672.	2700.	10.4	8.7	13.0	230.
4.5	770.	2858.	14.3	10.4	17.7	234.
5.0	865.	2971.	15.2	7.0	16.7	245.
5.5	977.	3085.	14.9	5.8	15.5	250.
6.0	1054.	3142.	17.0	4.3	17.5	254.
6.5	1145.	3253.	19.2	5.1	19.5	201.
7.0	1294.	3382.	23.4	4.5	23.5	259.
7.5	1424.	3508.	24.5	5.2	25.1	258.
8.0	1521.	3609.	21.5	3.5	21.0	201.
8.5	1631.	3719.	23.9	3.0	24.0	205.
9.0	1727.	3815.	22.6	1.3	22.0	207.
9.5	1820.	3908.	21.9	2.0	22.1	205.
10.0	1914.	3992.	22.0	0.3	22.0	209.
10.5	2003.	4091.	25.0	1.5	25.0	206.
11.0	2086.	4174.	25.1	0.3	25.1	209.
11.5	2162.	4256.	23.1	-1.2	23.1	275.
12.0	2255.	4345.	20.5	0.3	20.5	209.

theodolite position #2

COL CO IRAL1 — ELEV 2000 METERS — SUMMING TO SUM5

DATE 11/10/77 TIME 15:02:01 ADCENT RATE 500 FPS DATA INTERVAL IS 01.0

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/I	V/I	W/I		
	SFC		5.52		7.0		4.0	22.
0.4	150	2253.	5.08	-1.44	-5.72	-0.19	10.3	170
1.0	300	2300	1.07	-1.14	-5.00	-0.01	10.1	204
2.3	412.	2510.	0.93	-0.89	-2.05	0.50	25.2	229
4.7	500	2500	-0.01	-0.57	-1.15	1.50	--	--
5.1	412.	2412.	-5.04	-3.04	-5.04	-0.11	--	--
10.0	1912.	3000.	-12.04	-7.01	-3.71	-0.90	"	
10.2	2412.	3000.	-10.15	-0.51	-0.00	1.90		

COL CO IRAL1 — ELEV 2000 METERS — SUMMING TO SUM5

DATE 11/10/77 TIME 15:02:01 ADCENT RATE 500 FPS DATA INTERVAL IS 01.0

TIME	HEIGHT	HEIGHT	U-COMP	V-COMP	AND SPEED	AND DIR
MIN	M (AGL)	M (MSL)	M/S	M/S	M/S	DEG
0.0	0.	2000.	5.0	5.0	4.0	220.
0.5	76.	2104.	20.1	11.2	23.5	242.
1.0	179.	2200.	-0.0	11.4	13.6	151.
1.5	277.	2305.	4.4	15.6	14.3	194.
2.0	307.	2455.	15.1	10.1	21.2	220.
2.5	443.	2551.	20.7	15.0	25.5	234.

DATE 11/21/77

TIME MIN	HEIGHT M (AGL)	HEIGHT FT (MSL)	TEMP DEG C	W/I KTS	W/I KTS	W/I KTS	TD KTS	DEG
	SFC		-1.0		N.V			
1.0	152	2250	-2.2	-1.1	-1.7	1.2	3.4	194
2.0	300	2350	-4.0	-1.1	-2.7	0.0	7.4	200
2.5	412.	2500.	-5.1	-1.1	-5.2	-2.2	15.4	202
3.0	500	2500	-5.1	-0.7	-5.2	-2.2	10.2	220
3.4	412.	3000.	-3.2	-0.7	-1.5	-1.5	20.4	222
4.0	*1470	3500	-11.5		1.1	3.1		
10.5	*1707	3795	-8.4		-1.1	2.7		
11.0	1312.	4000.	-10.1	-3.1	-3.7	-0.5		
10.1	2412.	5000.	-11.5	-7.1	-4.5	-2.5		

DATE 11/21/77

TIME MIN	HEIGHT M (AGL)	HEIGHT FT (MSL)	U-COMP KTS	V-COMP KTS	WND SPEED KTS	WND DIR DEG
			1HR AVG DATA ARE REQUIRED			
0.5	76.	2144.	-1.0	-1.5	2.2	132.
1.0	152.	2240.	1.1	3.0	3.4	140.
1.5	229.	2317.	0.9	4.5	4.5	191.
2.0	305.	2393.	3.1	7.0	7.0	204.
2.5	381.	2469.	4.3	11.0	12.0	200.
3.0	301.	2509.	7.0	14.0	10.2	200.
3.5	015.	2703.	7.2	15.5	17.1	205.
4.0	092.	2700.	5.4	11.0	12.0	205.
4.5	708.	2850.	7.1	12.0	14.4	209.
5.0	344.	2932.	11.9	15.2	19.3	210.
5.5	420.	3008.	13.4	15.2	20.5	222.
6.0	496.	3084.	14.5	17.8	23.0	220.
6.5	1073.	3161.	17.2	15.0	22.8	229.
7.0	1149.	3237.	10.2	13.2	23.7	251.
7.5	1225.	3313.	15.0	9.7	18.0	238.
8.0	1301.	3389.	17.1	7.1	19.3	242.
8.5	1389.	3477.	14.5	11.3	21.5	238.
9.0	1479.	3567.	21.1	14.1	25.3	250.
9.5	1555.	3643.	22.1	13.7	27.1	255.
10.0	1631.	3719.	21.0	14.0	25.9	237.
10.5	1707.	3795.	20.9	13.0	23.1	242.

theodolite position #2

TIME (H)	HEIGHT (AGL)	HEIGHT (ASL)	TEMP DEG C	U/I m/s	V/I m/s	U/I CAPOL	S m/s	DEG
	SFC		-1.10		0.0			
1.0	150	2250	-2.92	-1.10	-1.72	1.21	0.1	117.
1.5	300	2400	-4.08	-1.19	-2.87	0.00	0.4	104.
2.0	412.	2500.	-5.10	-1.06	-5.20	-2.27	12.5	190.
2.0	500	2588	-5.14	-0.94	-5.20	-2.27	15.9	189.
5.4	412.	3000.	-5.92	-0.78	-1.54	1.54	15.5	280.
9.0	*1478	3566	-11.30		0.19	3.12		
10.5	*1707	3795	-12.49		-0.19	2.73		
11.0	1912.	4000.	-10.07	-5.15	-5.58	-0.57		
10.1	2412.	5000.	-17.45	-7.78	-.59	2.55		

TIME (H)	HEIGHT (AGL)	HEIGHT (ASL)	U-COMP m/s	V-COMP m/s	WIND SPEED m/s	WIND DIR DEG
			TIME WIND DATA ARE 1-HOUR AVERAGES			
0.5	7m.	2154.	10.7	0.5	20.2	257.
1.0	152.	2246.	-5.1	6.1	5.0	112.
1.5	229.	2317.	-1.2	4.3	4.7	100.
2.0	305.	2393.	0.7	7.1	7.1	185.
2.5	381.	2469.	3.7	11.2	11.8	198.
3.0	501.	2589.	2.2	13.3	13.9	189.
3.5	615.	2703.	5.4	18.0	19.7	190.
4.0	692.	2780.	14.7	14.0	17.7	217.
4.5	768.	2856.	10.7	11.1	15.4	224.
5.0	844.	2932.	14.0	0.5	17.4	237.
5.5	920.	3008.	11.0	10.2	15.0	227.

DATE 11/21/77 TIME 15:35:51 ASCENT RATE 500 FPM DATA INTERVAL IS SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T DIG	D/T -500M	D/T LAPSE	WS M/S	WD DEG
	SFC		5.50		0.0		2.0	150
0.5	150	2250	3.42	-2.17	-0.01	-5.47	4.4	191
1.5	500	2600	1.10	-2.23	-0.22	-3.24	11.7	177
1.0	812.	2912.	-0.01	-0.40	-5.40	-2.52	12.0	205
1.5	500	2600	-0.55	-1.27	-5.34	-2.52	15.2	207
4.1	812.	3012.	-4.14	-5.20	-2.07	-0.06	12.0	204
7.0	*1504	3652	-7.01		-0.59	2.54		
10.0	*1821	3969	-8.55		-1.10	2.74		
10.0	1912.	4012.	-8.82	-6.44	-1.10	1.71		
15.4	2412.	5012.	-15.44	-8.41	-2.17	0.75		
22.4	3912.	6012.	-21.04	-5.45	-3.14	-0.00		

DATE 11/21/77 TIME 15:55:51 ASCENT RATE 500 FPM DATA INTERVAL IS SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2088.	-0.9	2.5	2.6	160.
0.5	76.	2164.	0.4	0.0	0.7	166.
1.0	223.	2311.	2.8	11.7	12.1	195.
1.5	360.	2448.	4.7	10.4	11.4	245.
2.0	524.	2612.	4.4	12.8	13.5	199.
2.5	600.	2750.	7.0	11.0	13.0	215.
3.0	745.	2833.	10.0	0.0	11.0	250.
3.5	921.	2969.	10.2	4.0	11.2	245.
4.0	898.	2988.	10.0	5.2	11.8	244.
4.5	977.	3065.	11.2	5.7	12.0	245.
5.0	1058.	3144.	13.3	6.5	14.8	244.
5.5	1130.	3224.	14.0	6.2	15.7	241.
6.0	1212.	3300.	15.1	7.8	17.5	244.
6.5	1288.	3378.	15.0	6.5	16.3	247.
7.0	1365.	3453.	15.8	5.9	17.8	251.

theodolite position #2

GOL CO TRACK — RCRV 2000 METERS — SOUNDING TO — LO

DATE 11/21/77 TIME 15:55MST ASCENT RATE 500 FPM DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/I	V/I	U/I	-S	
					M/S	LAPSE	M/S	DEG
	SFC		3.50		0.0		6.0	100.
.0	150	2253	3.42	-2.17	-0.90	-3.07	22.5	144.
1.5	300	2380	1.10	-2.25	-0.22	-3.25	16.4	150.
1.0	412.	2500.	-0.01	-1.80	-5.19	-2.50	12.4	149.
1.4	500	2588	-0.55	-1.24	-5.04	-2.50	13.2	144.
4.1	712.	3000.	-4.19	-3.20	-2.47	-0.46	13.0	245.
7.0	1500	3452	-7.01		-0.55	2.54		
10.0	1921	3909	-0.33		-0.19	2.74		
10.0	1712.	4000.	-0.42	-2.04	-1.55	1.50	20.5	207.
15.9	2412.	5000.	-15.34	-4.31	-2.17	-0.70		
22.6	3412.	6000.	-21.07	-5.75	-5.79	-0.00		

GEL-CR TRACK — RCRV-2000 METERS — SOUNDING TO — LO

DATE 11/21/77 TIME 15:55MST ASCENT RATE 500 FPM DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
.0	0.	2040.	-4.0	6.0	6.9	180.
.5	70.	2104.	5.3	10.0	32.1	251.
1.0	225.	2311.	-10.4	7.5	12.9	120.
1.5	366.	2454.	9.3	12.0	12.0	102.
2.0	520.	2617.	2.5	13.3	13.5	191.
2.5	666.	2760.	0.3	12.0	14.0	215.
3.0	745.	2853.	14.3	7.0	15.9	240.
3.5	861.	2967.	11.6	5.3	12.7	245.
4.0	898.	2986.	12.0	5.0	13.2	246.
4.5	977.	3065.	10.7	6.6	12.3	241.
5.0	1054.	3144.	12.8	6.7	14.4	242.
5.5	1130.	3224.	13.3	7.2	15.1	242.
6.0	1212.	3308.	14.3	6.9	15.9	244.
6.5	1286.	3376.	14.5	6.0	16.0	245.
7.0	1365.	3453.	16.8	6.6	18.0	248.
7.5	1441.	3529.	14.8	5.4	20.0	253.
8.0	1517.	3605.	22.2	4.4	22.6	259.
8.5	1593.	3681.	23.0	3.5	23.4	262.
9.0	1669.	3757.	21.6	1.4	21.7	266.
9.5	1746.	3834.	22.4	2.1	22.5	264.
10.0	1822.	3910.	24.4	0.2	25.2	250.
10.5	1898.	3986.	21.2	3.0	21.2	262.
11.0	1974.	4062.	17.3	1.8	17.4	264.

CUL CO TRACT ELEV 2088 METERS SOUNDING ID 4444

DATE 11/23/77 TIME (GMT) ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/I STU	V/I SOUTH	U/I LAMBERT	FS M/S	DEG
	SFC		-5.15		0.0		2.1	170.
1.0	151	2238	-6.51	-1.17	-2.99	1.13	3.8	22.
1.7	300	2388	-8.10	-1.03	-2.32	0.80	5.1	240.
2.7	812.	2500.	-9.37	-1.17	-2.35	0.48	5.5	262.
3.2	301	2388	-9.31	-0.36	-1.50	1.57	8.7	275.
5.2	912.	3000.	-12.44	-3.77	-3.42	-0.49	9.9	291.
10.2	1912.	4000.	-19.11	-0.03	-1.19	1.75	11.7	302.
15.2	2912.	5000.	-25.21	-3.55	-0.44	-1.51		
20.2	3912.	6000.	-30.11	-0.30	-3.03	-7.13		

CUL CO TRACT ELEV 2088 METERS SOUNDING ID 4444

DATE 11/23/77 TIME (GMT) ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U/S M/S	V/S M/S	SPEED M/S	DIR DEG
0.0	0.	2088.	-1.4	2.0	2.1	170.
0.2	70.	2160.	-1.7	0.5	2.0	104.
1.0	152.	2240.	2.4	2.2	3.4	222.
1.2	232.	2320.	2.7	2.4	3.5	235.
2.0	312.	2400.	5.0	2.0	5.4	249.
2.5	392.	2480.	4.4	1.4	5.1	253.
3.0	404.	2552.	0.0	0.0	0.0	271.
3.5	541.	2629.	1.4	-1.4	1.6	281.
4.0	617.	2705.	0.5	-2.0	0.7	287.
4.5	693.	2781.	4.5	-5.2	10.4	289.
5.0	769.	2857.	8.2	-5.6	9.9	292.
5.5	857.	2945.	9.4	-5.0	10.2	292.
6.0	942.	3030.	9.1	-5.4	9.7	291.
6.5	1030.	3124.	9.6	-5.5	10.4	290.
7.0	1114.	3202.	8.2	-5.4	9.8	303.
7.5	1190.	3278.	9.1	-2.1	9.4	283.
8.0	1267.	3355.	8.0	-3.5	9.5	292.
8.5	1343.	3431.	9.4	-4.7	10.2	298.
9.0	1419.	3507.	8.0	-4.9	9.0	302.
9.5	1495.	3583.	4.5	-8.3	11.4	304.
10.0	1571.	3659.	7.8	-7.1	10.9	315.
10.5	1648.	3736.	9.1	-7.1	11.6	306.
11.0	1724.	3812.	9.2	-8.0	12.2	311.
11.5	1807.	3895.	8.6	-8.7	10.9	305.
12.0	1888.	3976.	9.4	-7.8	12.2	310.
12.5	1967.	4056.	8.4	-8.2	10.5	305.
13.0	2041.	4129.	8.0	-7.0	11.0	310.

theodolite position #2

CUL DE SAC ELEV 2000 METERS SOUNDING ID 0004

DATE 11/23/77 TIME 08:40:51 ASCENT RATE 500 FPM DATA INTERVAL IS SEC.

TIME min	HEIGHT m (AGL)	HEIGHT m (MSL)	TEMP DEG C	U/I m/s	V/I m/s	D/I LAPSE	WS m/s	WD DEG
	SFC		-5.15		0.0		6.1	170.
1.0	157.	2257.	-6.51	-1.37	-2.90	0.05	5.8	176.
1.7	300.	2300.	-8.10	-1.00	-2.32	0.00	4.2	227.
2.7	412.	2500.	-9.37	-1.01	-2.55	0.07	5.7	205.
3.2	300.	2300.	-9.57	-0.32	-1.30	1.57	6.3	270.
5.5	412.	3000.	-12.88	-3.27	-3.92	-0.97	4.1	241.
12.2	1912.	4000.	-19.11	-0.05	-1.14	1.15	11.0	307.
18.2	2912.	5000.	-28.21	-5.55	-4.09	-1.51		
24.2	3912.	6000.	-38.77	-6.55	-5.00	-0.15		

CUL DE SAC ELEV 2000 METERS SOUNDING ID 0004

DATE 11/23/77 TIME 08:40:51 ASCENT RATE 500 FPM DATA INTERVAL IS SEC.

TIME min	HEIGHT m (AGL)	HEIGHT m (MSL)	U/S m/s	V/S m/s	WS m/s	WD DEG
0.0	0.	2000.	-0.4	2.0	2.1	170.
0.5	76.	2100.	-0.1	-3.2	3.4	264.
1.0	152.	2200.	-3.5	-1.5	5.7	114.
1.5	232.	2320.	-1.5	1.2	1.8	153.
2.0	312.	2400.	0.1	2.0	4.8	204.
2.5	389.	2478.	-3.5	-1.4	5.4	254.
3.0	464.	2552.	-0.5	-1.1	0.5	271.
3.5	541.	2629.	0.2	-1.2	0.5	201.
4.0	617.	2705.	-0.5	-2.4	0.7	286.
4.5	693.	2781.	-4.2	-5.5	7.0	241.
5.0	769.	2857.	-0.8	-5.0	9.5	242.
5.5	857.	2945.	1.4	-5.9	10.2	245.
6.0	942.	3030.	-0.0	-2.9	8.6	290.
6.5	1030.	3124.	1.0	-5.1	11.5	291.
7.0	1114.	3202.	1.8	-2.8	8.1	291.
7.5	1190.	3270.	0.7	-3.0	9.0	292.
8.0	1267.	3355.	0.1	-3.6	8.9	294.
8.5	1343.	3431.	0.4	-4.4	9.5	297.
9.0	1419.	3507.	-0.1	-4.8	9.8	301.
9.5	1495.	3583.	0.0	-0.5	10.7	300.
10.0	1571.	3659.	7.8	-0.5	10.1	310.
10.5	1646.	3736.	7.9	-7.4	10.8	313.
11.0	1724.	3812.	7.6	-0.7	10.2	311.
11.5	1807.	3895.	8.4	-7.4	11.0	312.
12.0	1888.	3976.	8.7	-6.8	11.1	308.
12.5	1964.	4052.	8.9	-6.1	11.7	305.
13.0	2041.	4129.	7.3	-5.3	9.0	308.

CAL CO TRACT ELEV 2000 METERS SOUNDING ID 5078

DATE 11/23/77 TIME 15:55MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T DIF	D/T SOUM	D/T LAPSE	WS M/S	WD DEG
	SFC		8.57		0.0		2.6	300.
0.7	150.	2250.	8.28	-2.51	-5.10	-0.23	3.2	297.
1.5	300	2300.	2.49	-1.00	-3.45	-1.00	2.0	285.
2.3	412.	2500.	1.28	-1.18	-3.53	-0.45	2.7	271.
2.9	500	2500	0.72	-0.54	-2.07	0.00	2.1	255.
5.5	412.	3000.	-3.10	-3.57	-2.09	0.05	3.4	275.
11.2	1912.	4000.	-11.00	-0.81	-2.55	0.39	3.1	282.
17.5	2912.	5001.	-16.23	-5.18	-1.97	0.95		

CAL CO TRACT ELEV 2000 METERS SOUNDING ID 5078

DATE 11/23/77 TIME 15:55MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME	HEIGHT	HEIGHT	U-COMP	V-COMP	WND SPEED	WND DIR
MIN	M (AGL)	M (MSL)	M/S	M/S	M/S	DEG
0.0	0.	2000.	2.2	-1.5	2.6	300.
0.5	76.	2100.	3.1	-1.9	3.5	301.
1.0	177.	2200.	3.9	-1.4	4.4	290.
1.5	254.	2346.	2.8	-0.1	2.9	284.
2.0	343.	2431.	2.2	-0.3	2.3	280.
2.5	401.	2529.	2.8	-0.2	2.8	275.
3.0	522.	2601.	1.1	-1.4	1.8	218.
3.5	594.	2695.	1.1	-1.1	1.5	225.
4.0	674.	2782.	1.3	-0.7	1.5	244.
4.5	756.	2864.	1.5	1.3	2.0	230.
5.0	855.	2963.	1.0	-1.2	1.6	230.
5.5	913.	3020.	5.1	-1.4	5.4	244.
6.0	967.	3075.	4.9	1.7	5.2	251.
6.5	1068.	3152.	5.0	1.1	5.1	258.
7.0	1169.	3269.	4.0	-0.8	4.1	282.
7.5	1222.	3331.	4.4	-0.4	4.4	276.
8.0	1306.	3392.	4.6	0.5	4.5	283.
8.5	1391.	3479.	4.2	0.5	4.3	283.
9.0	1472.	3560.	4.4	-0.5	4.4	281.
9.5	1600.	3688.	7.1	-0.1	7.1	271.
10.0	1725.	3813.	8.1	-1.1	8.1	270.
10.5	1801.	3889.	7.6	-2.7	8.1	289.
11.0	1876.	3966.	6.4	-2.4	7.3	285.
11.5	1955.	4045.	6.2	-0.5	6.2	275.
12.0	2032.	4120.	8.4	-0.4	8.5	273.
12.5	2112.	4200.	8.3	-0.5	8.4	273.
13.0	2264.	4292.	8.0	-0.7	8.0	275.
13.5	2292.	4340.	9.1	-1.0	9.1	277.
14.0	2305.	4450.	10.1	-1.6	10.1	277.
14.5	2404.	4532.	8.8	-5.7	9.9	306.

theodolite position #2

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	W-COMP M/S	WIND SPEED M/S	WIND DIR DEG
	SFC		0.59		0.0	2.6	300
0.4	153	2253	0.00	-2.31	-3.10	-0.23	11.5	270
1.0	300	2300	2.44	-1.00	-3.43	-1.00	2.9	300
2.0	612.	2500.	1.24	-1.18	-3.38	-0.85	3.0	129.
2.4	500	2500	0.72	-0.59	-2.07	0.00	2.1	184.
5.5	-12.	3000.	-3.10	-5.57	-2.74	1.83	6.2	239.
11.2	1412.	4000.	-11.00	-0.01	-2.53	0.57	0.7	214.
17.0	2912.	5000.	-10.04	-5.18	-1.97	0.95		

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2080.	2.6	-1.5	2.6	300.
0.5	76.	2164.	15.5	1.2	10.5	290.
1.0	177.	2265.	0.4	1.1	4.0	285.
1.5	256.	2344.	0.0	-2.4	2.5	345.
2.0	343.	2431.	1.5	0.5	1.5	290.
2.5	441.	2529.	-5.5	-1.0	5.7	14.
3.0	522.	2610.	1.6	0.4	1.5	251.
3.5	598.	2686.	0.8	0.6	0.9	235.
4.0	676.	2762.	1.0	1.1	1.4	222.
4.5	750.	2836.	1.0	0.9	1.4	228.
5.0	835.	2923.	1.9	1.1	2.2	240.
5.5	911.	2999.	2.9	1.5	3.2	249.
6.0	987.	3075.	4.7	0.9	4.8	259.
6.5	1064.	3152.	4.0	0.6	4.0	263.
7.0	1140.	3228.	5.9	1.4	5.4	267.
7.5	1222.	3310.	5.0	1.5	5.2	282.
8.0	1304.	3392.	5.0	1.0	5.5	302.
8.5	1391.	3479.	4.5	1.8	4.9	289.
9.0	1472.	3560.	0.2	-0.2	0.2	270.
9.5	1600.	3688.	7.5	-0.8	7.5	270.
10.0	1725.	3813.	7.5	-0.7	7.7	274.
10.5	1801.	3889.	6.2	-0.5	6.1	292.
11.0	1878.	3966.	0.0	-0.0	0.1	270.
11.5	1955.	4043.	6.5	-0.5	6.4	275.
12.0	2032.	4120.	6.5	-0.5	6.5	272.
12.5	2112.	4200.	6.0	-0.6	6.0	270.
13.0	2204.	4292.	1.6	-1.6	10.4	271.
13.5	2282.	4370.	8.5	-0.9	8.5	275.
14.0	2368.	4456.	7.0	-0.9	8.6	305.

COL CR TRACT FLEV 2000 METERS SOUNDING ID 5005

DATE 11/20/77 TIME 08:20:51 ASCENT RATE 500 FPM DATA INTERVAL IS 0.5 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T DIF	D/T SUM	D/T LAPSE	WS M/S	WD DEG
	SFC		-4.77		0.0		1.5	190.
0.5	* 76	2164	-2.36		5.82	0.75		
1.0	150	2230	-2.03	1.44	-0.57	2.30	M	M
2.0	300	2386	-5.02	-3.19	-8.95	1.97		
2.7	412.	2500.	-8.19	-0.46	-3.00	-0.15	4.5	305.
3.2	500	2588	-4.43	-1.55	-5.07	-0.18	4.6	304.
5.0	912.	3000.	-8.04	-5.04	-2.52	0.41	0.5	330.
11.9	1912.	3000.	-17.68	-8.96	-5.58	-0.40	10.0	335.
17.0	2912.	5000.	-29.04	-7.40	-0.20	2.73		

COL CR TRACT ELEV 2000 METERS SOUNDING ID 5003

DATE 11/20/77 TIME 08:20:51 ASCENT RATE 500 FPM DATA INTERVAL IS 0.5 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2000.	-1.5	0.3	1.5	190.
2.5	301.	2409.	-5.5	-2.1	5.1	341.
3.0	457.	2565.	-3.7	-2.7	4.6	306.
3.5	550.	2650.	-5.4	-3.1	4.6	313.
4.0	650.	2710.	-5.5	-3.8	5.0	319.
4.5	730.	2810.	-4.4	-3.3	5.4	317.
5.0	810.	2900.	-3.7	-4.6	6.1	322.
5.5	895.	2985.	-3.1	-5.6	6.1	329.
6.0	971.	3059.	-5.4	-7.1	7.8	334.
6.5	1047.	3135.	-2.8	-6.9	7.4	336.
7.0	1137.	3225.	-5.5	-8.1	8.8	337.
7.5	1231.	3319.	-0.2	-7.3	9.6	326.
8.0	1313.	3401.	-4.9	-7.0	8.0	325.
8.5	1384.	3477.	-5.4	-8.2	9.5	327.
9.0	1465.	3555.	-6.7	-8.5	11.5	324.
9.5	1541.	3641.	-8.1	-9.2	11.5	324.
10.0	1618.	3705.	-8.5	-7.8	10.2	320.
10.5	1696.	3784.	-8.2	-9.2	11.1	320.
11.0	1774.	3862.	-8.1	-8.5	10.4	324.
11.5	1852.	3940.	-8.3	-7.6	8.8	331.
12.0	1937.	4025.	-8.7	-9.4	10.6	335.
12.5	2025.	4113.	-7.5	-10.4	12.2	331.
13.0	2099.	4187.	-7.3	-8.0	11.3	327.

theodolite position #2

COL CB TRACT ELEV 2000 METERS SOUNDING TO 5000

DATE 11/28/77 TIME 08:28:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/I KTS	U/I 200M	U/I LAPSE	S M/S	DEG
	SFC		-4.11		0.0		1.5	100.
.5	* 76	2164	-2.54		5.42	0.75		
1.0	150	2238	-2.05	1.99	-0.51	2.50	1.7	351.
2.0	301	2389	-3.02	-0.19	-0.45	-1.97	2.5	324.
2.7	412.	2500.	-3.19	-0.86	-3.00	-0.13	3.4	325.
3.2	500	2588	-3.43	-1.33	-3.17	-0.14	3.7	337.
5.0	912.	3000.	-5.09	-5.04	-2.52	0.41	0.1	341.
11.9	1912.	4000.	-17.60	-8.96	-3.30	-0.04	10.0	335.
17.0	2912.	5000.	-25.00	-7.40	-0.20	2.73		

COL CB TRACT ELEV 2000 METERS SOUNDING TO 5000

DATE 11/28/77 TIME 08:28:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2000.	-1.5	0.3	1.5	100.
0.5	76.	2164.	2.0	-5.1	21.0	250.
1.0	152.	2240.	-1.4	-1.6	1.1	339.
1.5	229.	2317.	2.1	-1.0	2.4	290.
2.0	305.	2393.	1.0	-2.1	2.5	320.
2.5	381.	2469.	1.8	-2.6	3.3	321.
3.0	457.	2545.	1.9	-3.0	3.5	328.
3.5	556.	2630.	0.9	-4.6	4.1	347.
4.0	630.	2718.	3.5	-3.5	5.0	315.
4.5	736.	2816.	0.0	-4.0	4.7	35.
5.0	818.	2898.	1.9	-4.0	4.4	334.
5.5	895.	2985.	1.2	-4.7	5.0	346.
6.0	971.	3059.	5.7	-7.0	9.7	325.
6.5	1047.	3135.	4.3	-4.7	4.3	334.
7.0	1137.	3225.	5.3	-5.5	7.6	316.
7.5	1251.	3319.	3.9	-7.0	8.0	331.
8.0	1315.	3401.	5.3	-9.0	10.3	330.
8.5	1384.	3477.	7.0	-8.1	11.3	319.
9.0	1465.	3555.	8.1	-8.6	10.3	325.
9.5	1541.	3629.	7.1	-9.2	11.6	323.
10.0	1618.	3706.	3.9	-8.4	9.3	335.
10.5	1695.	3784.	7.0	-8.1	11.2	319.
11.0	1774.	3862.	5.7	-8.6	10.3	326.
11.5	1852.	3940.	4.9	-8.6	9.4	329.
12.0	1937.	4025.	4.1	-9.8	10.2	337.
12.5	2025.	4111.	4.9	-8.6	10.0	334.
13.0	2097.	4187.	4.4	-8.8	9.8	336.
13.5	2175.	4265.	5.3	-8.5	9.8	331.
14.0	2251.	4339.	5.4	-8.4	9.5	335.
14.5	2327.	4415.	4.7	-10.3	11.3	335.
15.0	2451.	4539.	4.4	-10.3	11.2	331.

COL CO INACT ELEV 2000 METERS SOUNDING ID 5005

DATE 11/20/77 TIME 15:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	T/I SIU	T/I SUUM	D/I LAMBE	M/S	DEG
	SFC		5.09		0.0		0.0	
0.0	150	2250	1.59	-2.50	-2.05	1.50	0.4	257.
1.7	500	2500	0.03	-0.50	-2.45	0.47	2.1	329.
2.5	912.	2500.	-0.52	-1.15	-1.15	1.79	3.6	315.
3.0	500	2500	-0.79	-0.47	-1.52	1.41	5.2	297.
4.5	*1273	2811	-2.25		-2.00	0.27		
5.0	912.	3000.	-3.00	-3.00	-3.03	-0.90	9.0	307.
7.5	*1273	3361	-7.99		-5.41	-2.48		
11.0	1912.	4000.	-13.00	-9.19	0.0	2.93		
11.5	*1700	4000	-13.00		1.10	0.10		
12.0	*2050	4144	-12.15		0.50	3.91		
17.5	2912.	5000.	-19.56	-5.92	-2.38	0.55		

COL CO INACT ELEV 2000 METERS SOUNDING ID 5005

DATE 11/20/77 TIME 15:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	2000.	0.0	0.0	0.0	0.
0.5	76.	2104.	0.5	-0.1	0.5	277.
1.0	151.	2279.	0.4	0.4	1.0	240.
1.5	267.	2355.	0.2	-1.7	1.8	354.
2.0	343.	2431.	1.0	-1.7	2.3	317.
2.5	419.	2507.	2.7	-2.0	3.7	314.
3.0	495.	2583.	1.0	-2.3	3.1	297.
3.5	572.	2660.	5.6	-2.6	6.2	295.
4.0	648.	2736.	6.0	-3.4	7.0	297.
4.5	724.	2812.	7.8	-3.3	8.5	308.
5.0	800.	2888.	6.3	-4.7	8.2	305.
5.5	867.	2975.	7.6	-5.8	9.6	307.
6.0	990.	3060.	8.6	-5.9	10.4	304.
6.5	1086.	3173.	8.9	-6.1	9.2	311.
7.0	1206.	3238.	8.8	-7.7	11.7	311.
7.5	1342.	3430.	10.7	-9.9	14.4	310.

theodolite position #2

COL CO INACT ELEV 2000 METERS SOUNDING IN SECS

DATE 11/20/77 TIME 15:10MST ASCENT RATE 500 FPM DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	U/I SIN	I/I -SUUM	U/I LARGE	S M/S	DEG
	SFC		3.04		0.0		0.0	0.
0.5	150	2250	1.39	-2.30	-2.05	0.30	1.6	103.
1.7	300	2300	0.03	-0.30	-2.05	0.01	4.3	274.
2.5	412.	2500.	-0.32	-1.15	-1.13	1.79	"	"
3.0	500	2500	-0.19	-0.01	-1.11	1.22	"	"
4.5	* 725	2811	-2.25		-2.06	0.27		
5.0	912.	3000.	-4.00	-3.00	-4.21	-1.20	"	"
7.3	*1273	3361	-7.92		-5.41	-2.48		
11.0	1912.	4000.	-13.09	-4.14	0.0	2.93		
11.5	*1980	4038	-13.44		1.18	4.17		
12.0	*2050	4140	-16.15		0.40	3.41		
17.5	2912.	5000.	-19.56	-5.97	-2.54	0.55		

COL CO INACT ELEV 2000 METERS SOUNDING IN SECS

DATE 11/20/77 TIME 15:10MST ASCENT RATE 500 FPM DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	2000.	0.0	0.0	0.0	0.
0.5	76.	2164.	11.4	2.0	11.5	260.
1.0	141.	2274.	-4.0	-1.0	4.2	14.
1.5	267.	2355.	5.3	1.4	5.5	285.
2.0	343.	2431.	1.4	-2.5	2.8	331.

COL CO TRACK — FLEX 2000 METERS — SOUNDING ID — 20

DATE 11/29/77 — TIME 08:28:31 — ASCENT RATE 500 FPM — DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T SOUN	D/T LAPSE	S M/S	DEG
	SFC		-4.30		0.0		2.1	150.
1.0	150	2235	-3.31	1.07	1.78	5.69	3.1	157.
1.5	* 200	2554	-3.16		-1.34	1.59		
2.0	303	2388	-3.52	-0.19	-2.11	0.83	7.5	199.
2.7	412.	2500.	-4.47	-1.20	-3.05	-0.53	8.8	215.
3.2	500	2588	-5.50	-0.79	-2.88	-0.04	5.3	211.
5.9	912.	3000.	-8.20	-2.85	-3.97	1.40	4.1	205.
7.0	*1079	3167	-5.59		0.58	3.51		
8.0	*1231	3319	-7.41		0.39	3.51		
11.0	*1717	3805	-11.30		3.50	0.83		
16.3	1912.	4000.	-8.45	1.75	4.44	1.50		
14.3	*2212	4300	-4.58		1.15	4.08		
18.3	2712.	4800.	-7.07	-5.25	-1.17	1.70		
24.8	3412.	5000.	-10.34	-6.05	-1.47	0.95		

COL CO TRACK — FLEX 2000 METERS — SOUNDING ID — 20

DATE 11/29/77 — TIME 08:28:31 — ASCENT RATE 500 FPM — DATA INTERVAL IS SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG
0.0	0.	2000.	-1.0	1.8	2.1	150.
0.5	76.	2164.	-0.8	1.6	1.8	152.
1.0	152.	2240.	-1.1	3.0	3.2	159.
1.5	229.	2317.	0.8	3.9	0.0	188.
2.0	305.	2393.	2.0	7.4	7.4	204.
2.5	384.	2472.	3.3	5.7	0.0	210.
3.0	404.	2552.	3.0	4.7	0.0	217.
3.5	506.	2634.	1.7	4.1	4.5	205.
4.0	622.	2710.	3.0	3.2	4.6	223.
4.5	698.	2786.	1.8	3.9	4.3	205.
5.0	774.	2862.	1.0	3.0	4.0	201.
5.5	850.	2938.	1.7	3.9	4.3	204.
6.0	927.	3015.	1.7	3.7	4.1	200.
6.5	1003.	3091.	-0.4	1.9	4.8	200.
7.0	1079.	3167.	0.0	1.0	0.2	253.
7.5	1155.	3243.	0.4	0.5	0.9	208.
8.0	1231.	3319.	0.1	-1.0	0.8	200.
8.5	1308.	3396.	0.0	-4.1	9.2	300.
9.0	1384.	3472.	0.5	-4.0	12.4	295.
9.5	1460.	3548.	1.7	-9.2	10.3	353.
10.0	1536.	3624.	1.1	-6.2	10.0	349.
10.5	1035.	3723.	1.5	-6.4	11.0	345.
11.0	1710.	3798.	1.5	-7.0	12.1	347.
11.5	1794.	3882.	10.5	-12.9	16.0	321.
12.0	1870.	3958.	8.2	-15.5	15.1	328.

theodolite position #2

TIME min	HEIGHT m (AGL)	HEIGHT m (MSL)	TEMP deg C	U/I m/s	V/I m/s	W/I m/s	S m/s	DEG
	SFC		-4.30		0.11		2.1	137.
1.0	150	2250	-5.31	1.47	-.76	3.69	10.2	142.
1.8	* 200	2554	-5.12		-1.58	1.59		
2.0	300	2388	-5.50	-0.19	-2.17	0.83	0.2	183.
2.7	412.	2500.	-5.47	-1.20	-3.43	-0.55	5.7	214.
3.2	500	2588	-5.54	-1.79	-2.88	1.04	4.0	199.
5.5	912.	3000.	-6.60	-2.05	-0.97	1.90	4.4	195.
7.0	*1079	3167	-8.59		0.58	5.51		
8.0	*1231	3319	-7.41		0.59	3.31		
11.0	*1717	3805	-11.30		3.5	8.45		
14.5	1912.	4000.	-8.45	1.75	4.44	7.30		
14.5	*2212	4300	-9.38		1.15	4.08		
18.3	2912.	5000.	-7.01	-3.23	-1.11	1.70		
24.0	3912.	6000.	-10.58	-5.46	-1.47	-.95		

TIME min	HEIGHT m (AGL)	HEIGHT m (MSL)	U/I m/s	V/I m/s	W/I m/s	S deg
0.1		2046.	-1.4	1.8	2.1	134.
0.5	76.	2169.	21.2	3.3	21.4	250.
1.0	152.	2244.	-0.1	1.2	9.0	97.
1.5	229.	2317.	-5.1	4.7	6.9	132.
2.0	305.	2393.	-.7	0.1	0.1	187.
2.5	380.	2472.	-2.5	0.4	0.5	245.
3.0	464.	2552.	1.0	3.7	4.2	203.
3.5	546.	2634.	0.7	3.7	3.8	191.
4.0	622.	2716.	1.0	3.4	4.2	253.
4.5	698.	2788.	1.5	4.1	4.4	200.
5.0	774.	2862.	2.1	3.7	4.3	209.
5.5	850.	2938.	3.0	4.0	5.0	210.
6.0	927.	3015.	4.0	4.2	4.2	188.
6.5	1003.	3091.	4.5	1.6	4.8	250.
7.0	1079.	3167.	4.0	1.3	5.0	249.
7.5	1155.	3243.	7.4	0.7	7.4	265.
8.0	1231.	3319.	8.5	-1.2	8.5	278.
8.5	1308.	3396.	7.8	-5.4	9.5	305.
9.0	1384.	3472.	6.0	-5.0	8.0	311.
9.5	1460.	3548.	7.4	-7.2	10.3	314.
10.0	1536.	3624.	8.5	-9.1	12.4	317.
10.5	1615.	3703.	8.9	-7.6	10.3	318.
11.0	1718.	3806.	9.4	-9.0	12.8	319.
11.5	1794.	3882.	8.3	-11.2	13.4	324.

COL CO IRACI ELEV 2000 METERS SOUNDING TO 30MB

DATE 11/29/77 TIME 14:57:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	T/D DIF	DWPT	E/T LAPSE	WS M/S	WD DEG
	SFC		1.79		0.0		0	
1.0	? 150	2250	0.44	=0.45	=2.05	0.34	11.5	195.
1.8	? 300	2300	=1.11	=1.45	=3.17	=0.80	15.5	201.
2.4	412.	?2500.	=1.88	=2.75	=1.71	1.22	17.1	202.
3.0	? 500	2500	=2.05	=3.20	=0.43	1.48	15.1	207.
5.7	912.	?3000.	=3.49	=1.44	=1.12	1.21	2.5	314.
12.2	1912.	?4000.	=7.30	=3.41	=1.10	1.11	1.0	270.
18.8	2912.	5000.	=11.45	=3.05	=2.50	0.39		
25.3	3912.	6000.	=10.35	=0.50	=1.39	1.50		

COL CH IRACI ELEV 2000 METERS SOUNDING TO 30MB

DATE 11/29/77 TIME 14:57:51 ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WIND SPEED M/S	WIND DIR DEG

THE WIND DATA ARE MISSING

0.5	70.	2100.	0.4	7.5	7.5	183.
1.0	152.	2202.	2.5	14.5	14.5	195.
1.5	234.	2282.	4.1	11.5	12.0	200.
2.0	340.	2392.	0.5	10.5	17.8	201.
2.5	436.	2518.	0.2	15.8	17.4	202.
3.0	517.	2545.	7.0	13.2	14.4	208.
3.5	503.	2671.	0.8	0.5	7.0	220.
4.0	659.	2707.	7.1	5.1	8.7	235.
4.5	755.	2843.	5.0	=4.2	5.2	304.
5.0	911.	2899.	2.6	=1.7	3.1	304.
5.5	888.	2970.	1.0	=2.0	2.0	321.
6.0	964.	3052.	1.8	=1.6	2.4	311.
6.5	1040.	3128.	2.4	=1.0	2.6	292.
7.0	1110.	3204.	3.2	=0.8	3.3	274.
7.5	1192.	3286.	1.9	=0.3	1.9	273.
8.0	1269.	3357.	10.5	=0.5	10.5	273.
8.5	1345.	3433.	1.4	0.8	1.4	284.
9.0	1421.	3509.	6.8	2.9	9.4	252.
9.5	1497.	3585.	4.3	5.9	14.1	247.
10.0	1575.	3661.	4.2	5.6	9.9	240.
10.5	1650.	3736.	4.8	4.8	9.8	241.
11.0	1726.	3812.	0.4	5.4	11.8	238.
11.5	1802.	3887.	7.5	4.0	8.8	230.
12.0	1878.	3963.	7.2	0.5	7.2	266.
12.5	1954.	4042.	4.4	=2.7	8.4	280.
13.0	2031.	4119.	4.7	=8.2	11.5	305.
13.5	2107.	4195.	14.1	=7.3	15.8	293.

theodolite position #2

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	N/S KM	E/W KM	U/D KM	S KM/S	DEG
	SRT		1.74		0.0			
1.0	? 150	2234	-1.44	-1.05	-2.45	0.88	13.0	174.
1.6	? 500	2500	-1.11	-1.75	-3.79	-0.86	16.5	155.
2.0	812.	?2500.	-1.88	-0.75	-1.71	1.22	17.1	142.
3.0	? 500	2500	-2.05	-0.20	-0.45	1.98	12.4	220.
5.7	912.	?3000.	-5.99	-1.64	-1.72	1.21	5.8	292.
12.6	1912.	4000.	-7.90	-3.91	-0.97	1.90		
18.5	2912.	5000.	-11.85	-3.95	-2.54	0.39		
25.3	3912.	6000.	-17.35	-0.37	-1.39	1.58		

TIME MIN	HEIGHT M (AGL)	HEIGHT (MSL)	N/S	E/W	N/S	N/S
0.5	70.	2100.	17.6	10.0	17.7	240.
1.0	152.	2244.	-11.8	0.7	15.4	124.
1.5	234.	2366.	-4.0	15.6	16.0	140.
2.0	340.	2432.	-7.9	14.0	20.0	157.
2.5	450.	2510.	0.0	15.1	16.2	202.
3.0	507.	2545.	-4.3	-1.1	12.1	230.
3.5	505.	2071.	0.0	0.0	10.9	255.
4.0	659.	2707.	4.0	2.1	8.5	251.
4.5	735.	2825.	0.0	0.5	0.0	000.
5.0	811.	2890.	-4.3	-5.3	4.2	314.
5.5	880.	2970.	4.0	-1.4	4.2	29?.
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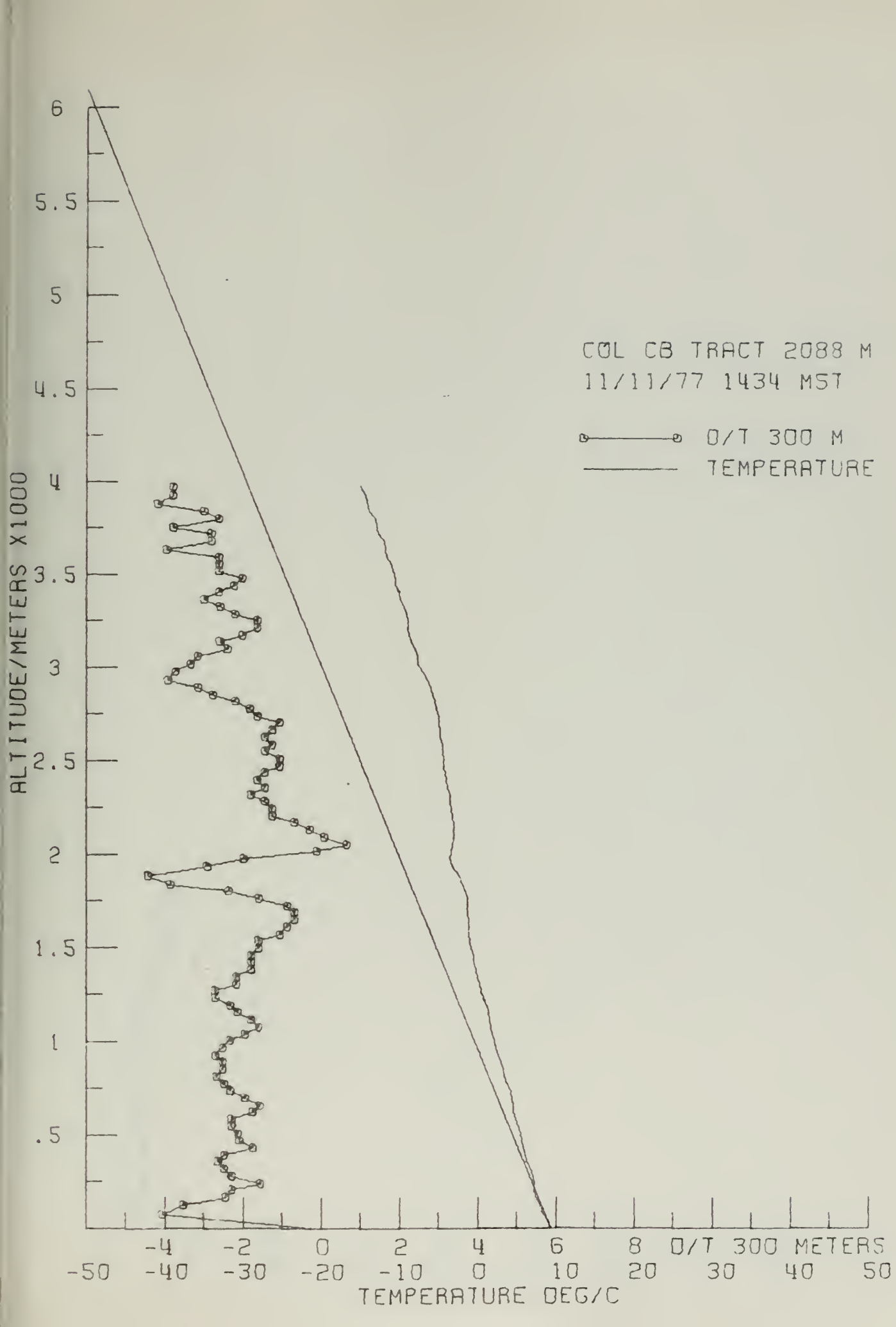
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11/11/77 1434 MST
O/T 300 M
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ALTITUDE/METERS X1000
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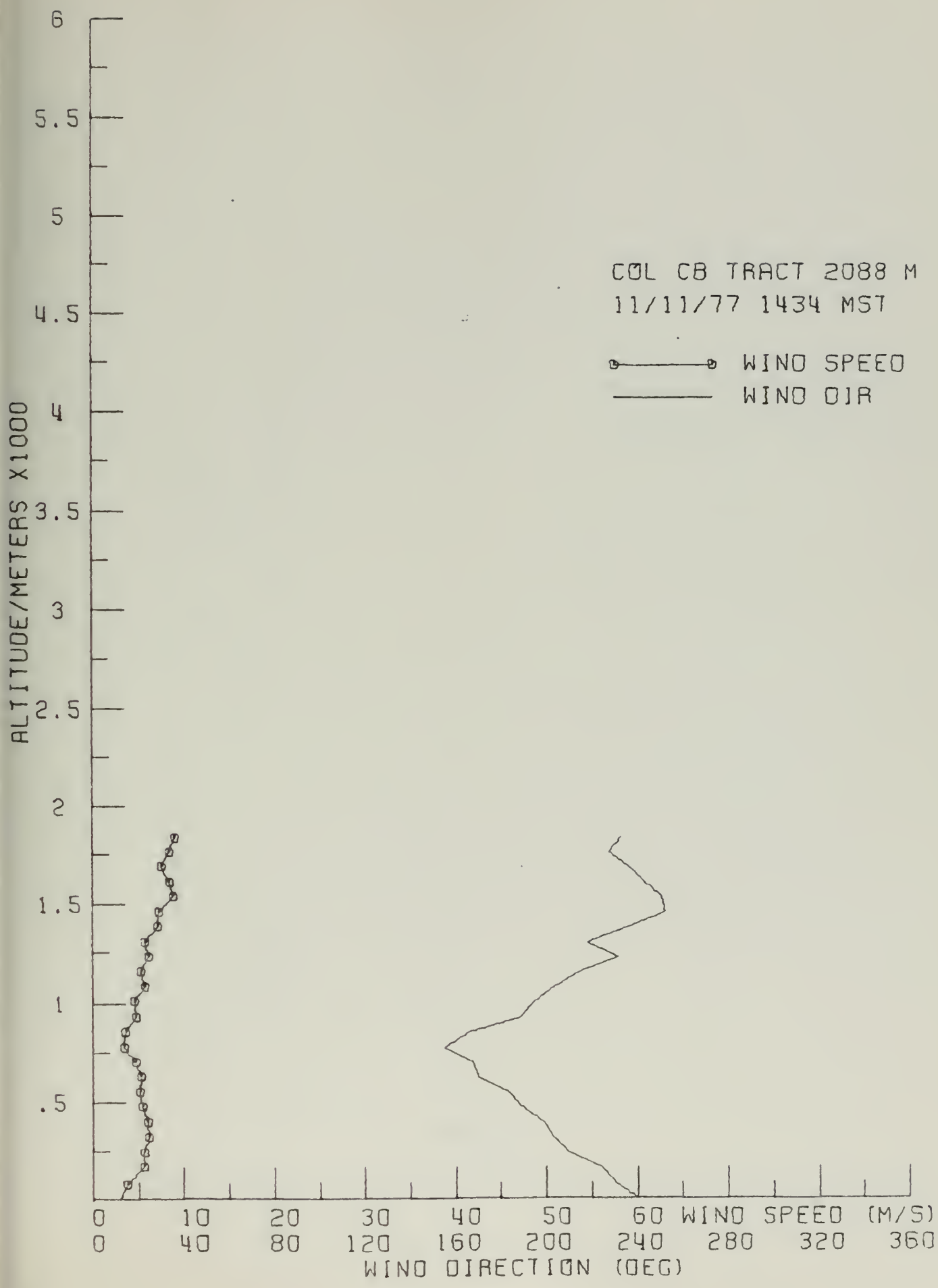
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11/11/77 1434 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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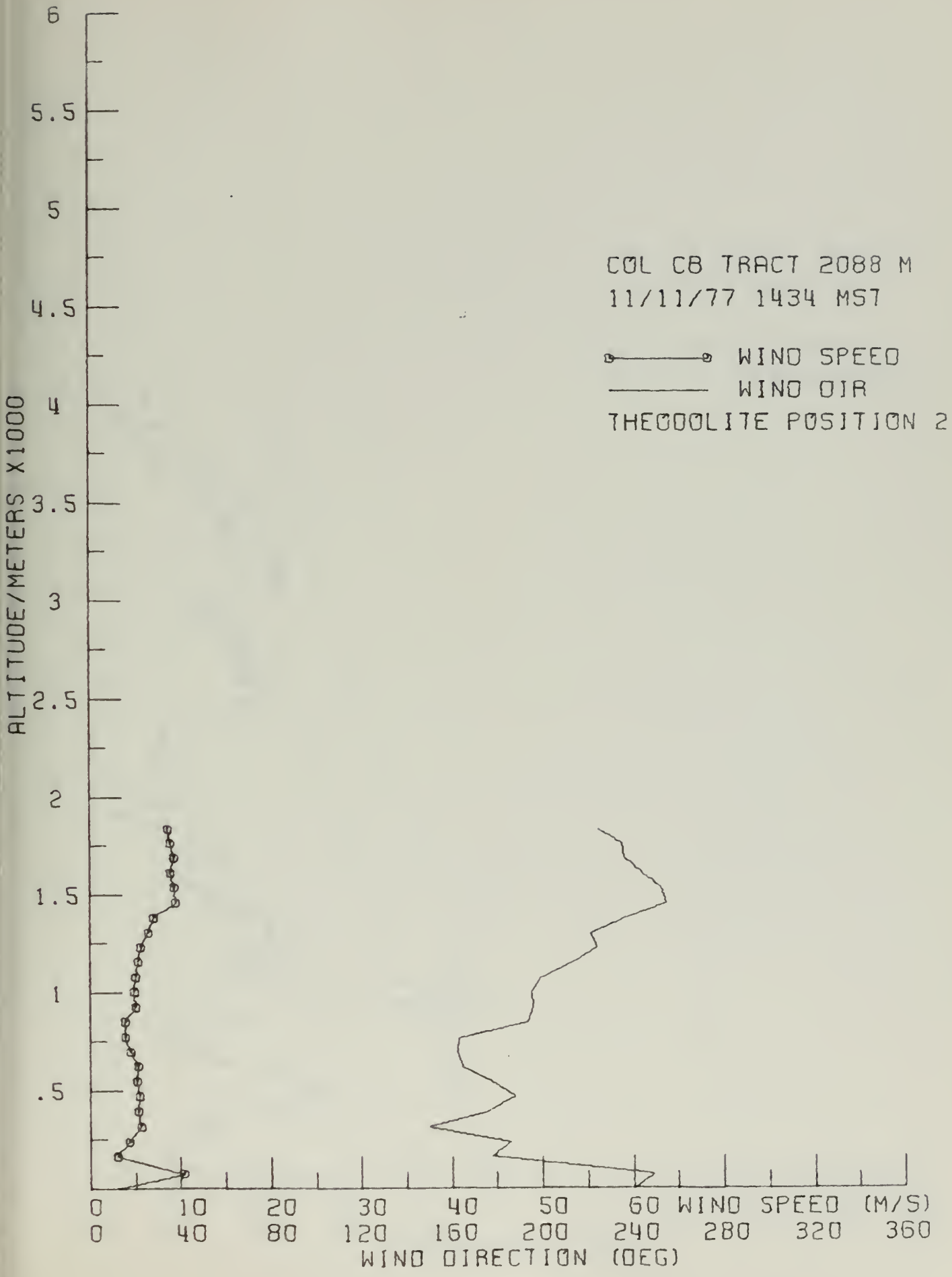
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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11/11/77 1434 MST
WIND SPEED
WIND DIR
THEODOLITE POSITION 2
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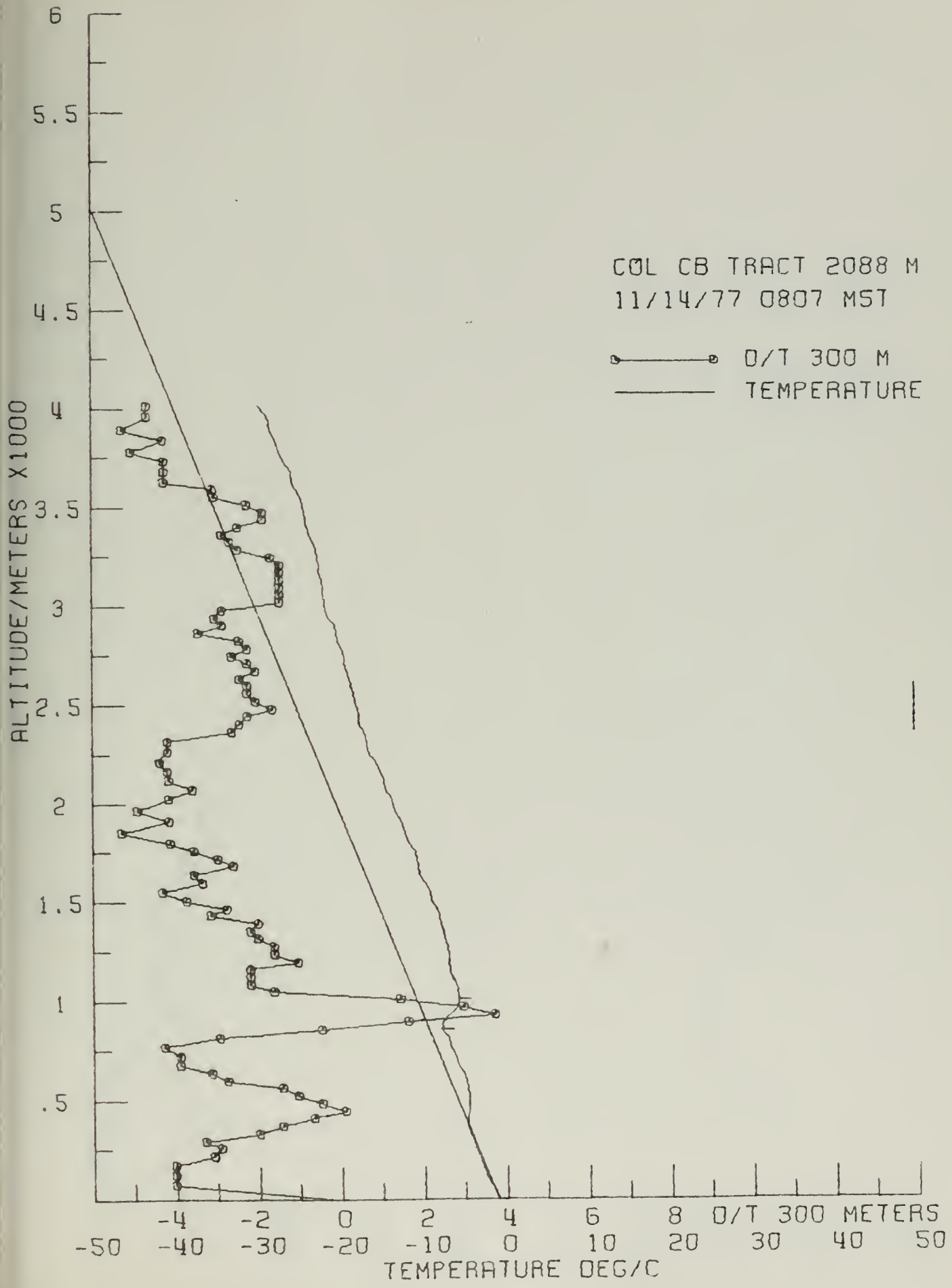
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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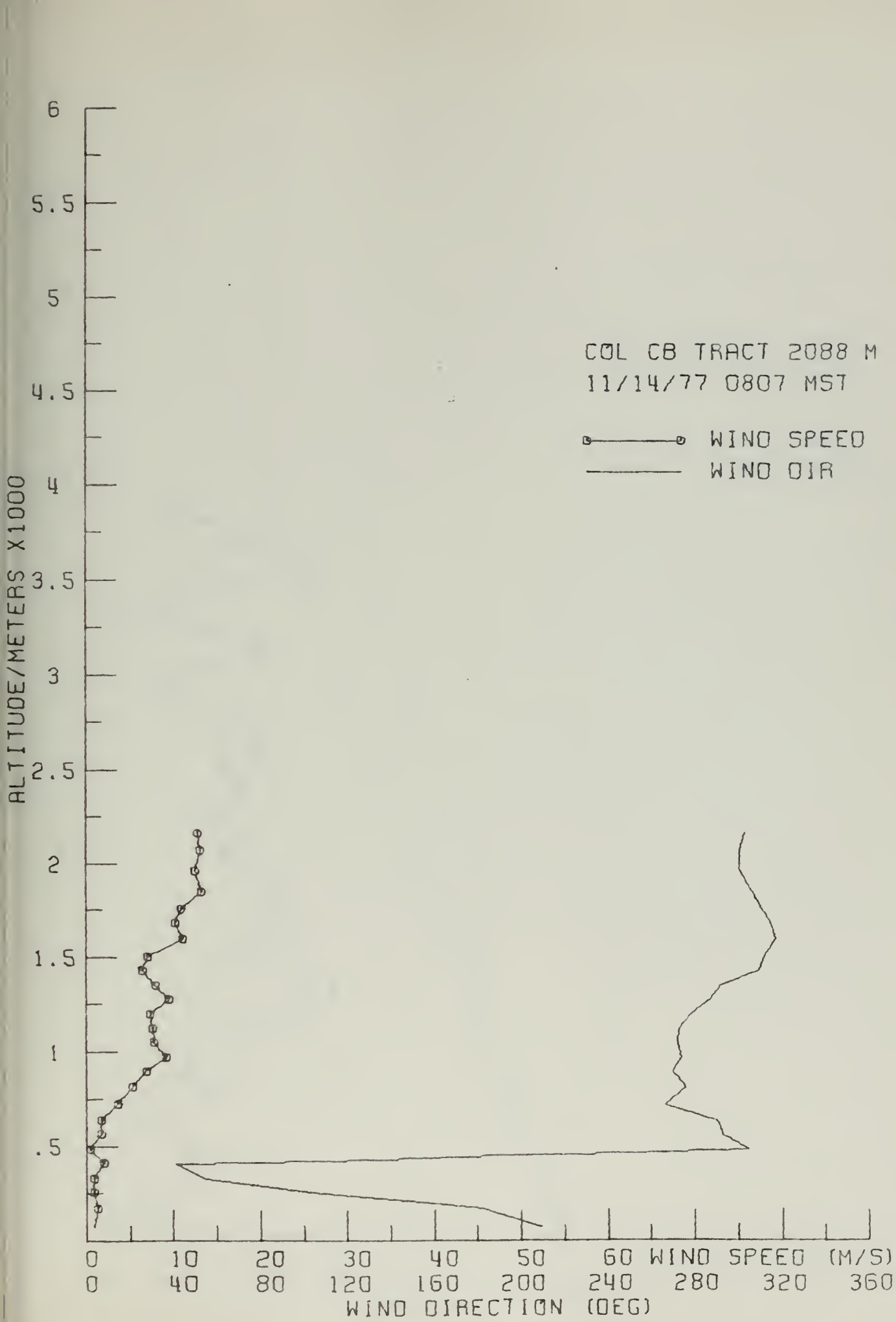
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WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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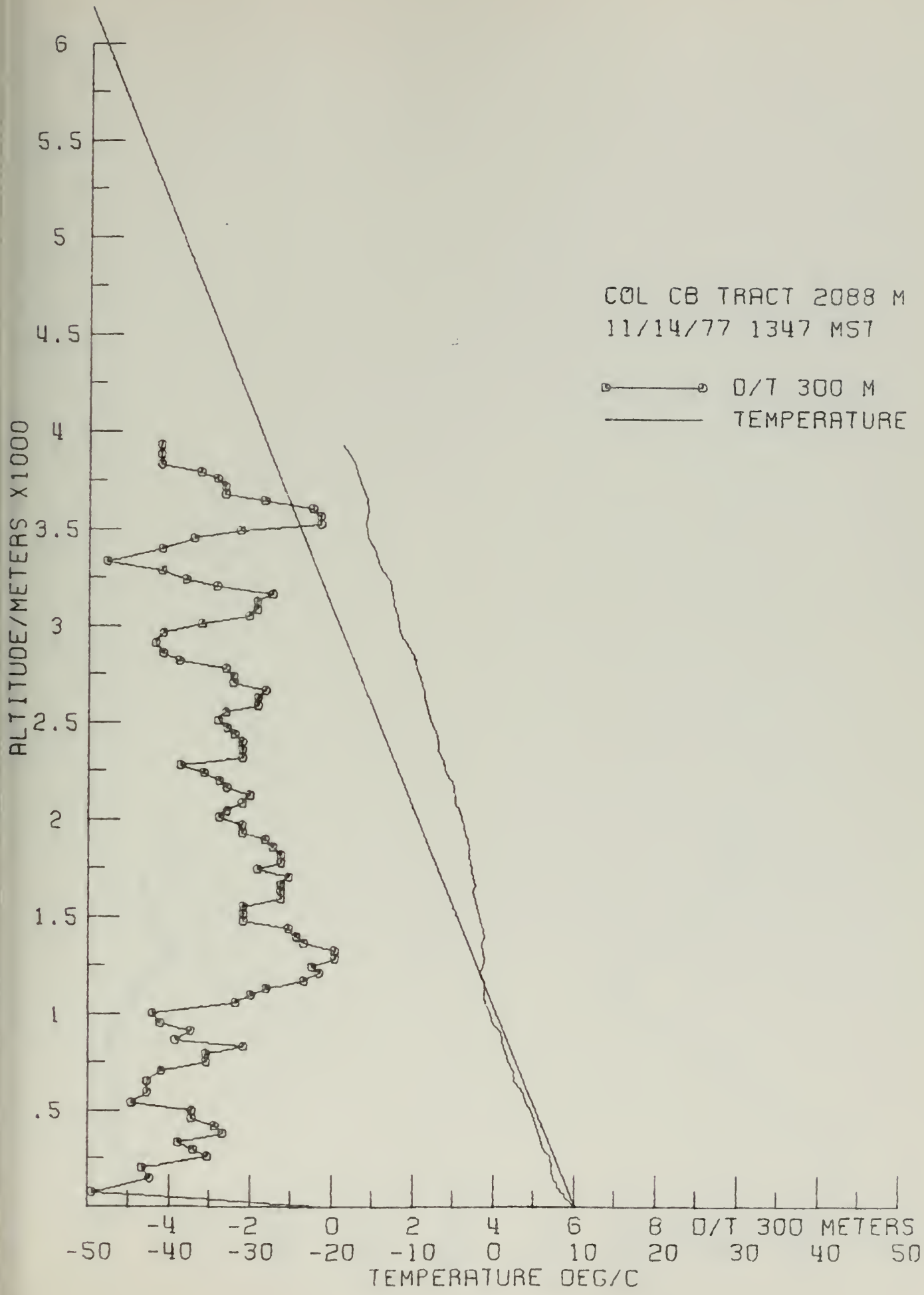
WIND DIRECTION (DEG)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ALTITUDE/METERS X1000
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1.5
1
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2
4
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20
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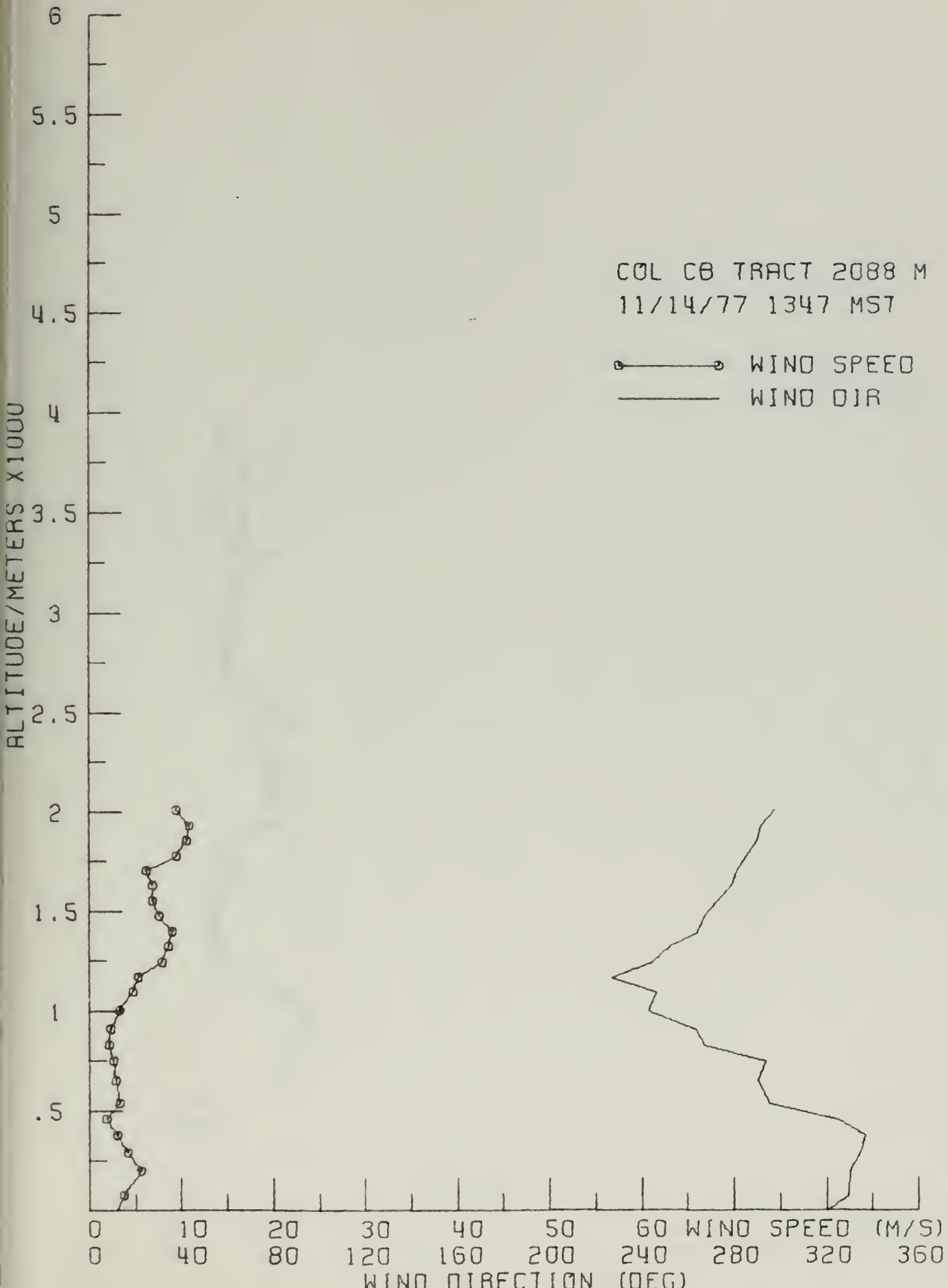
TEMPERATURE DEG/C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WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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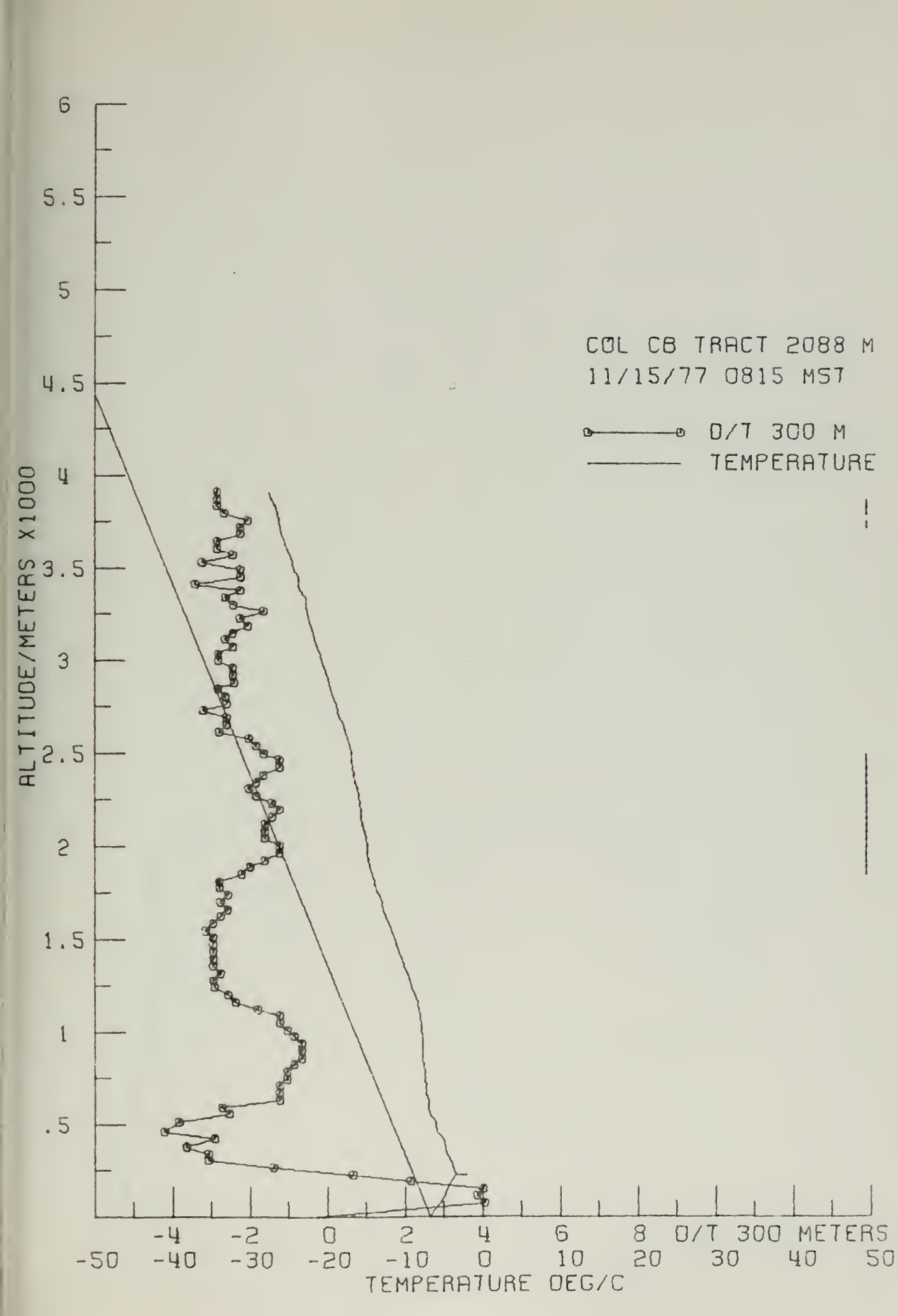
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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O/T 300 M
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ALTITUDE/METERS X1000
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-2
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2
4
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O/T 300 METERS
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-20
-10
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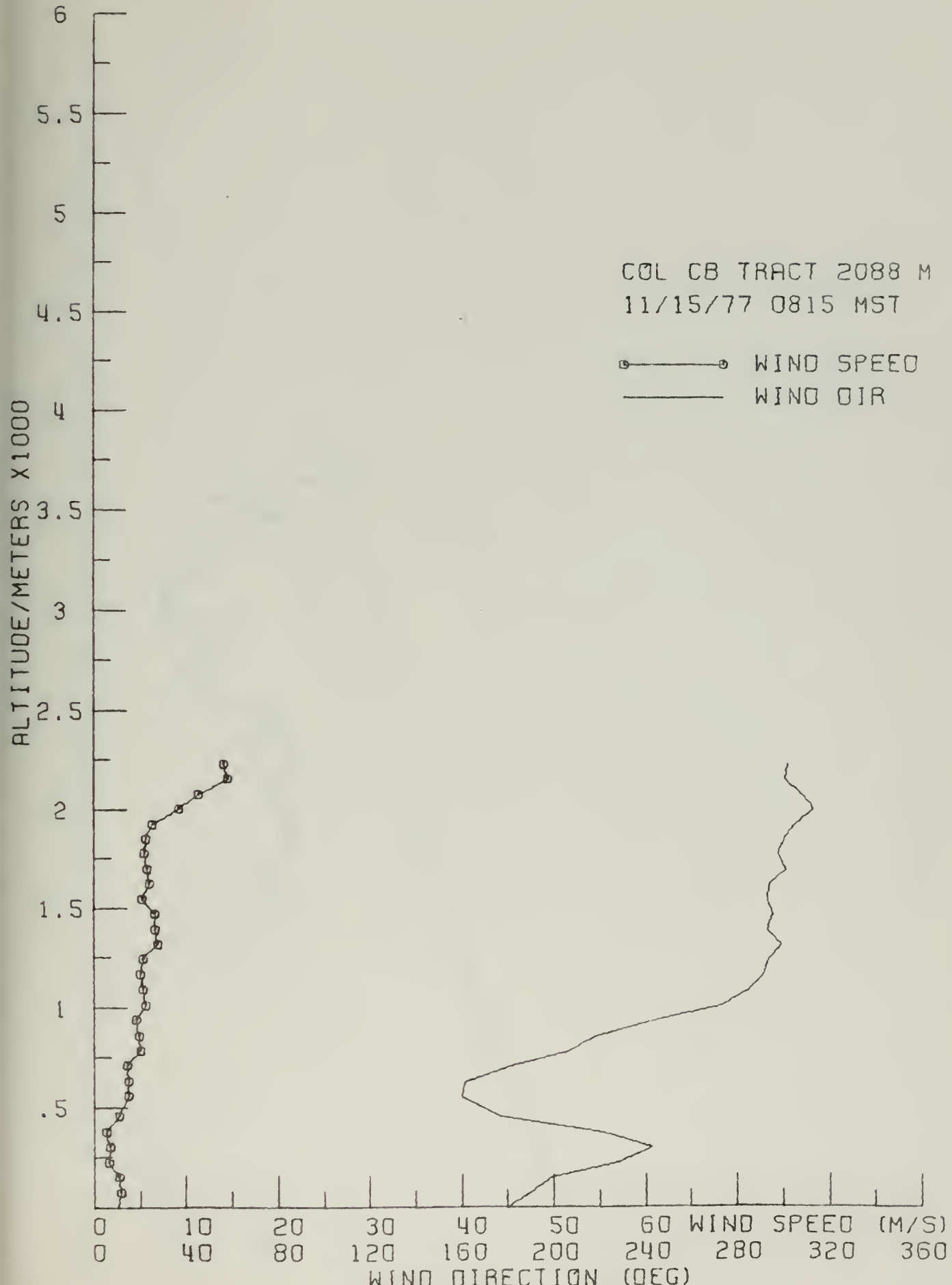
10
20
30
40
50
TEMPERATURE DEG/C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11/15/77 0815 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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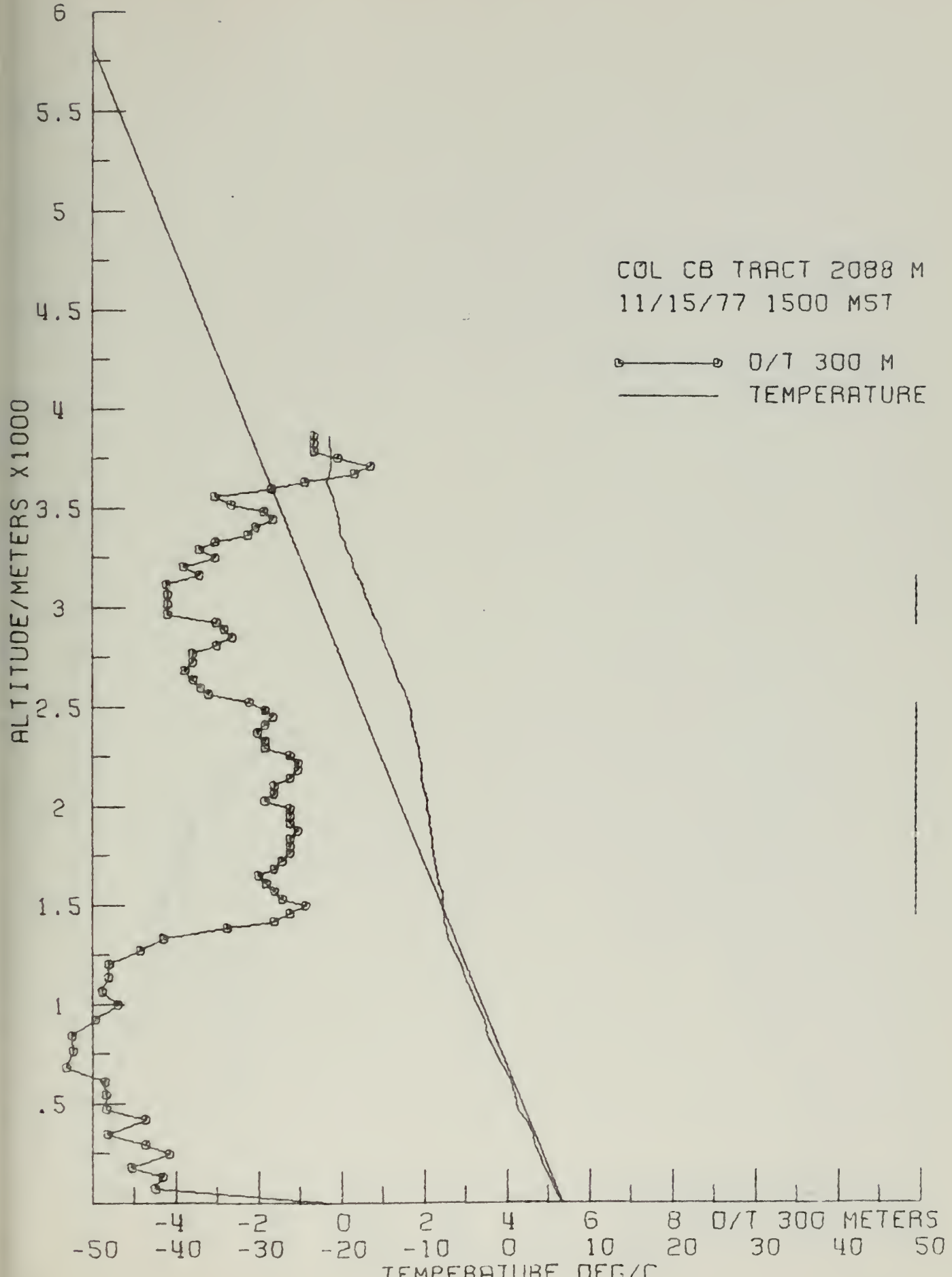
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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O/T 300 M
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ALTITUDE/METERS X1000
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4
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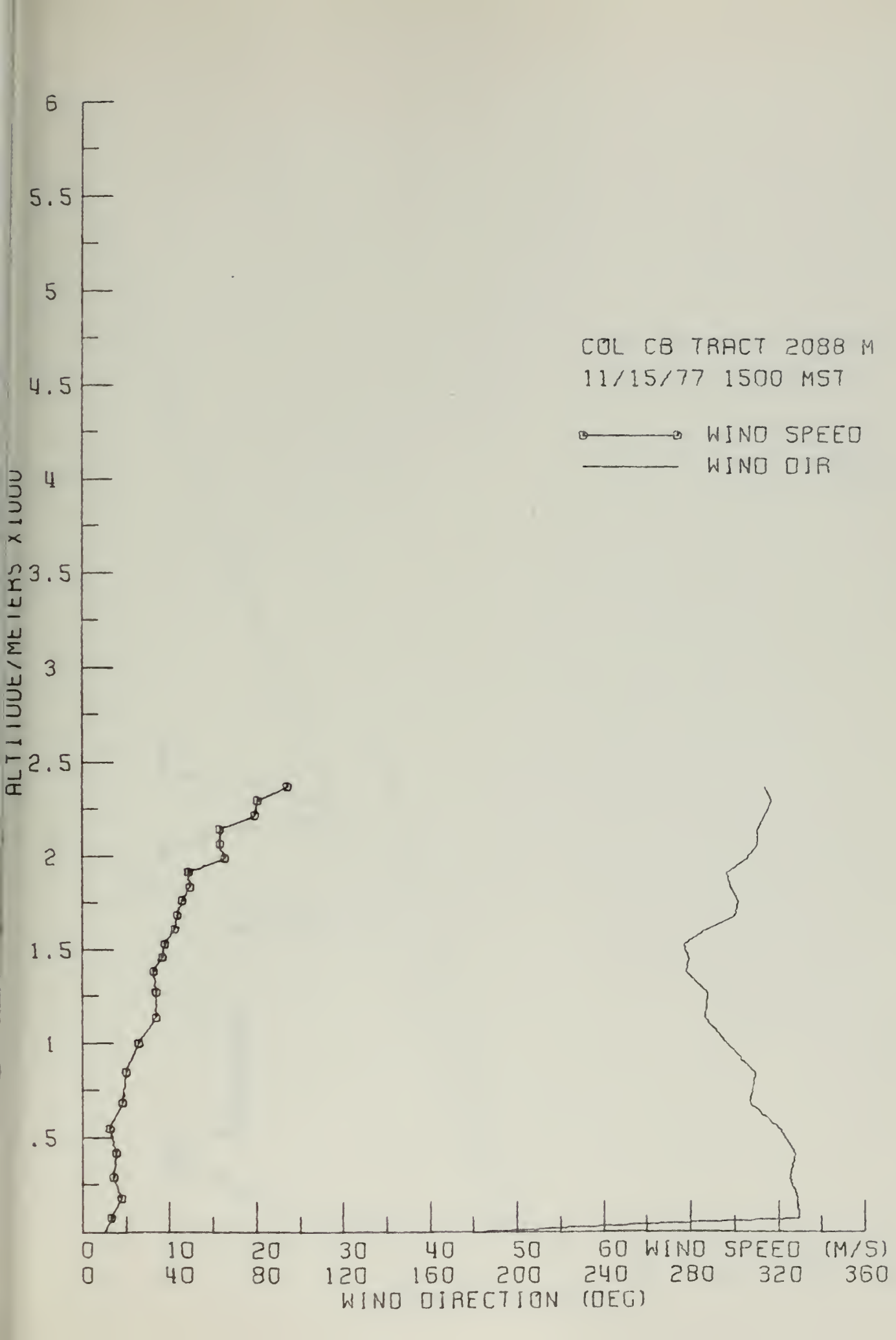
50
TEMPERATURE DEG/C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11/15/77 1500 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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4
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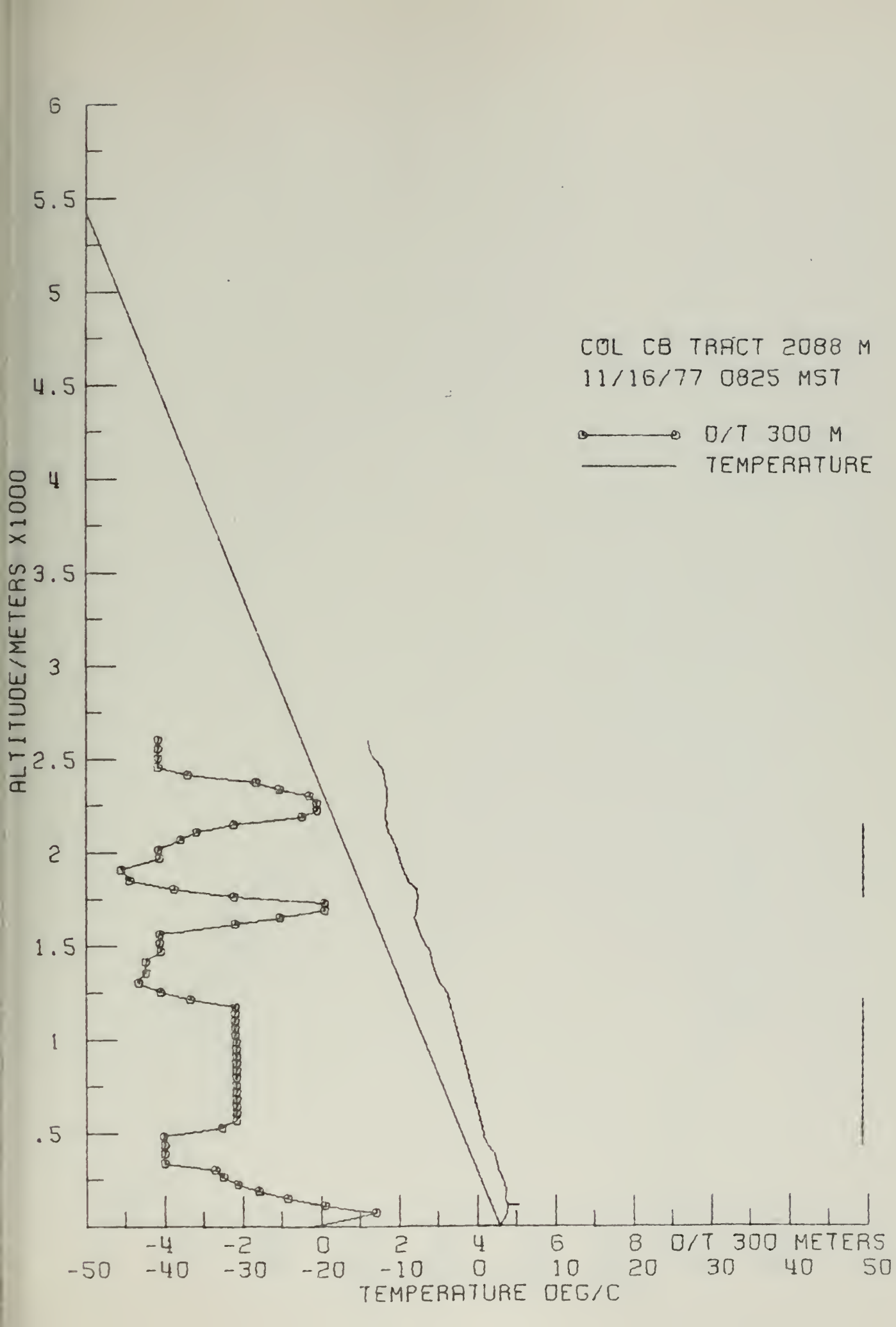
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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11/16/77 0825 MST
O/T 300 M
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ALTITUDE/METERS X1000
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-4
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2
4
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O/T 300 METERS
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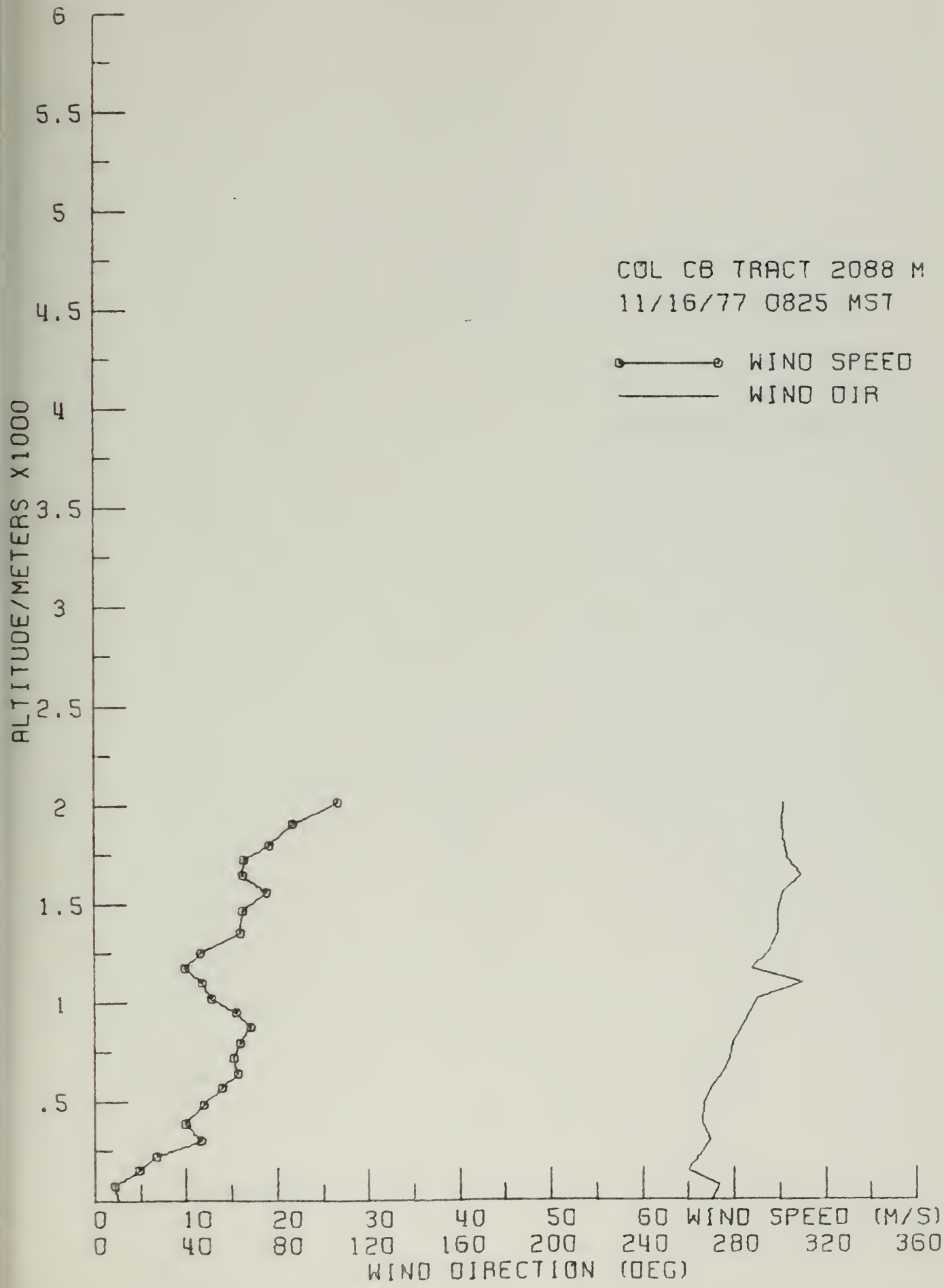
50
TEMPERATURE DEG/C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11/16/77 0825 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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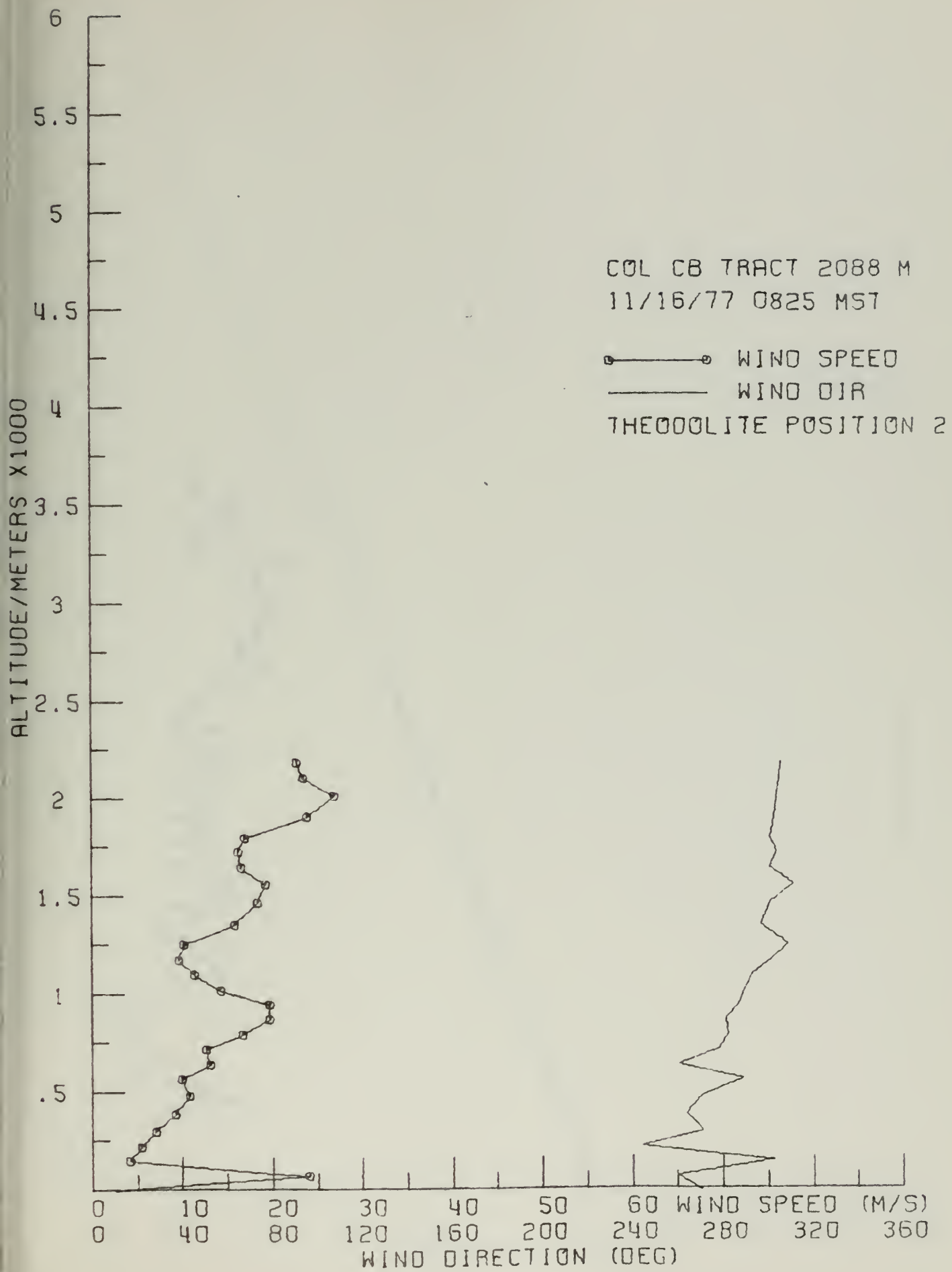
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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11/16/77 0825 MST
WIND SPEED
WIND DIR
THEODOLITE POSITION 2
ALTITUDE/METERS X1000
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4.5
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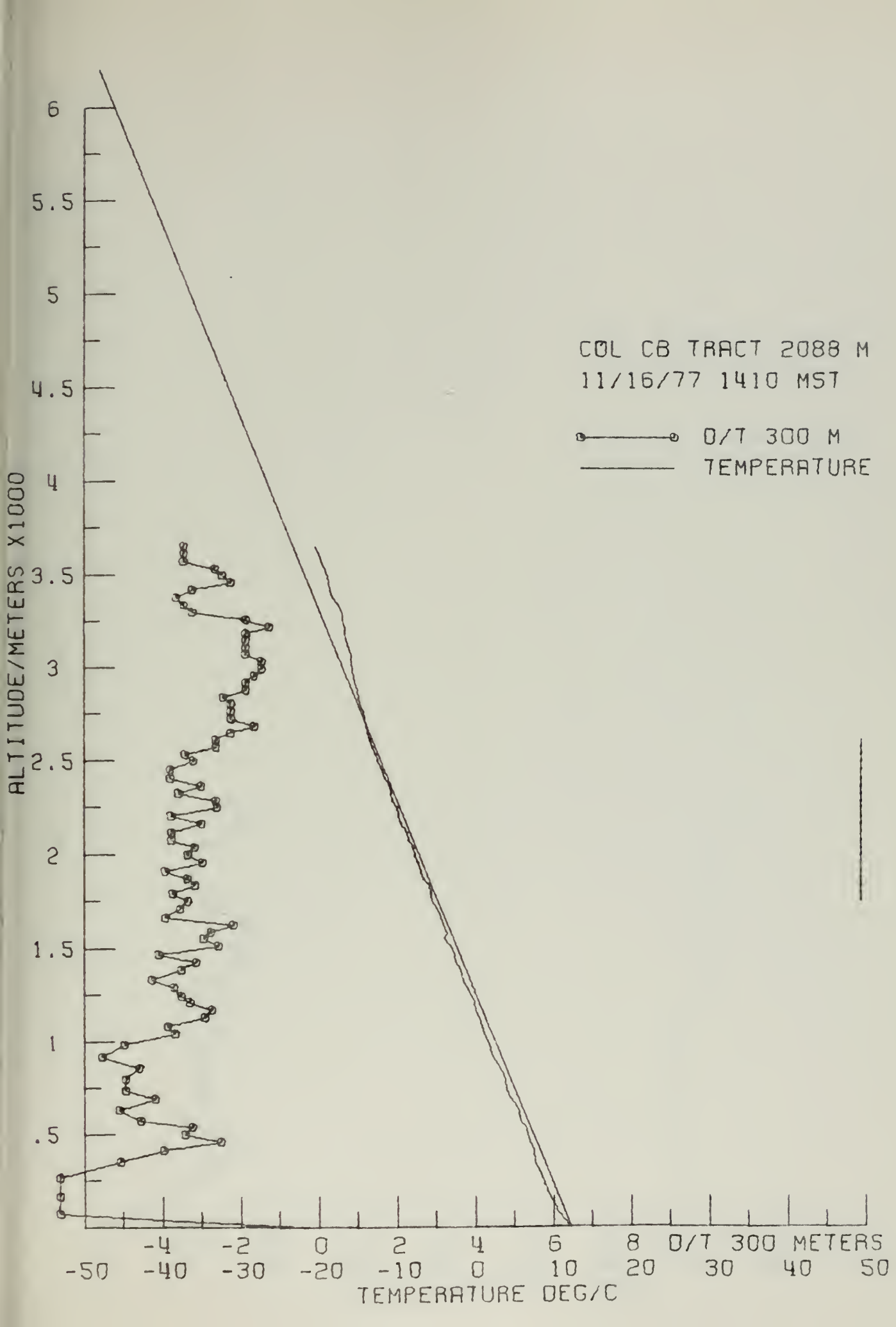
WIND DIRECTION (DEG)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O/T 300 M
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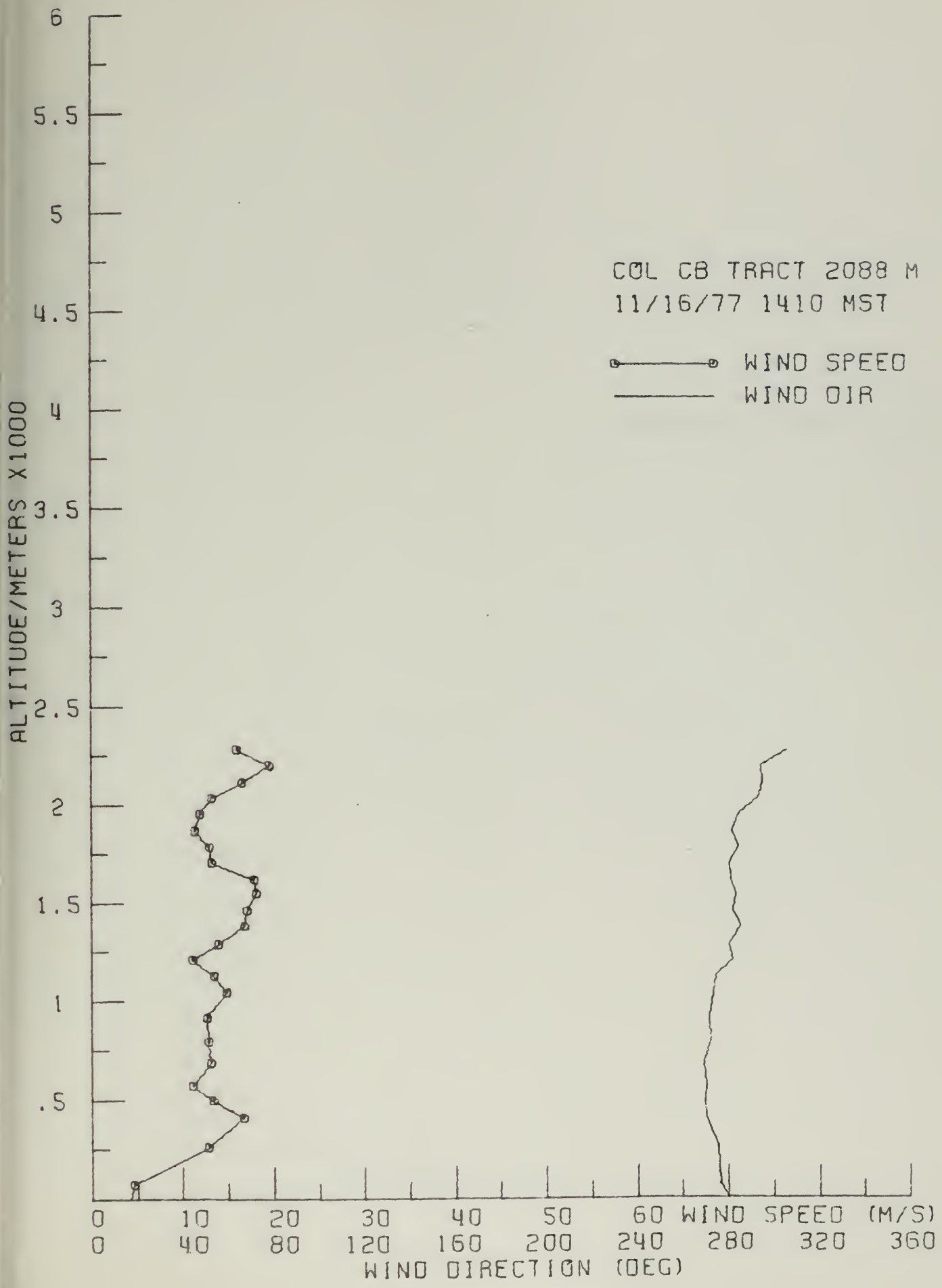
TEMPERATURE DEG/C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11/16/77 1410 MST
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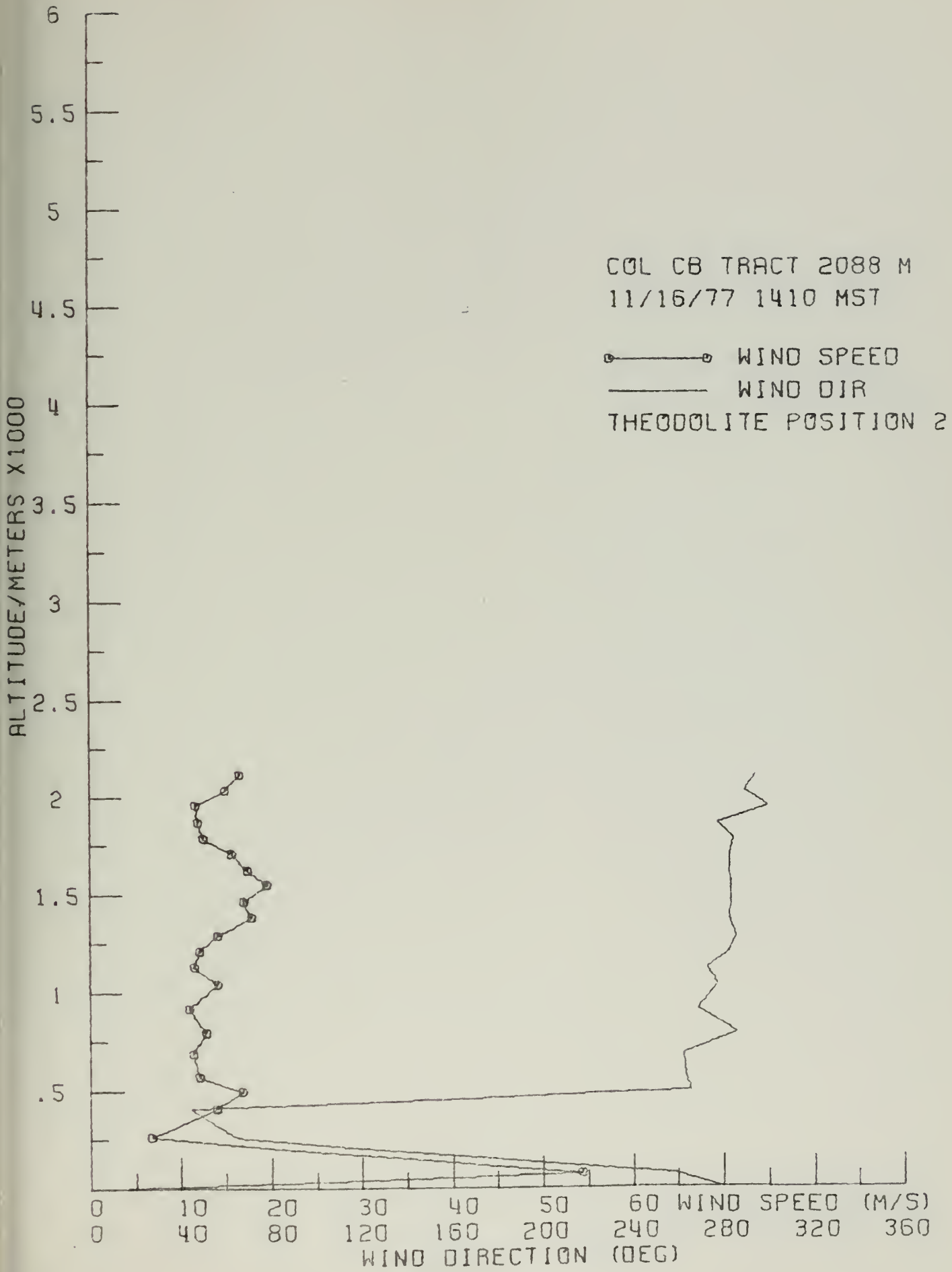
WIND DIRECTION (DEG)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WIND SPEED
WIND DIR
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4.5
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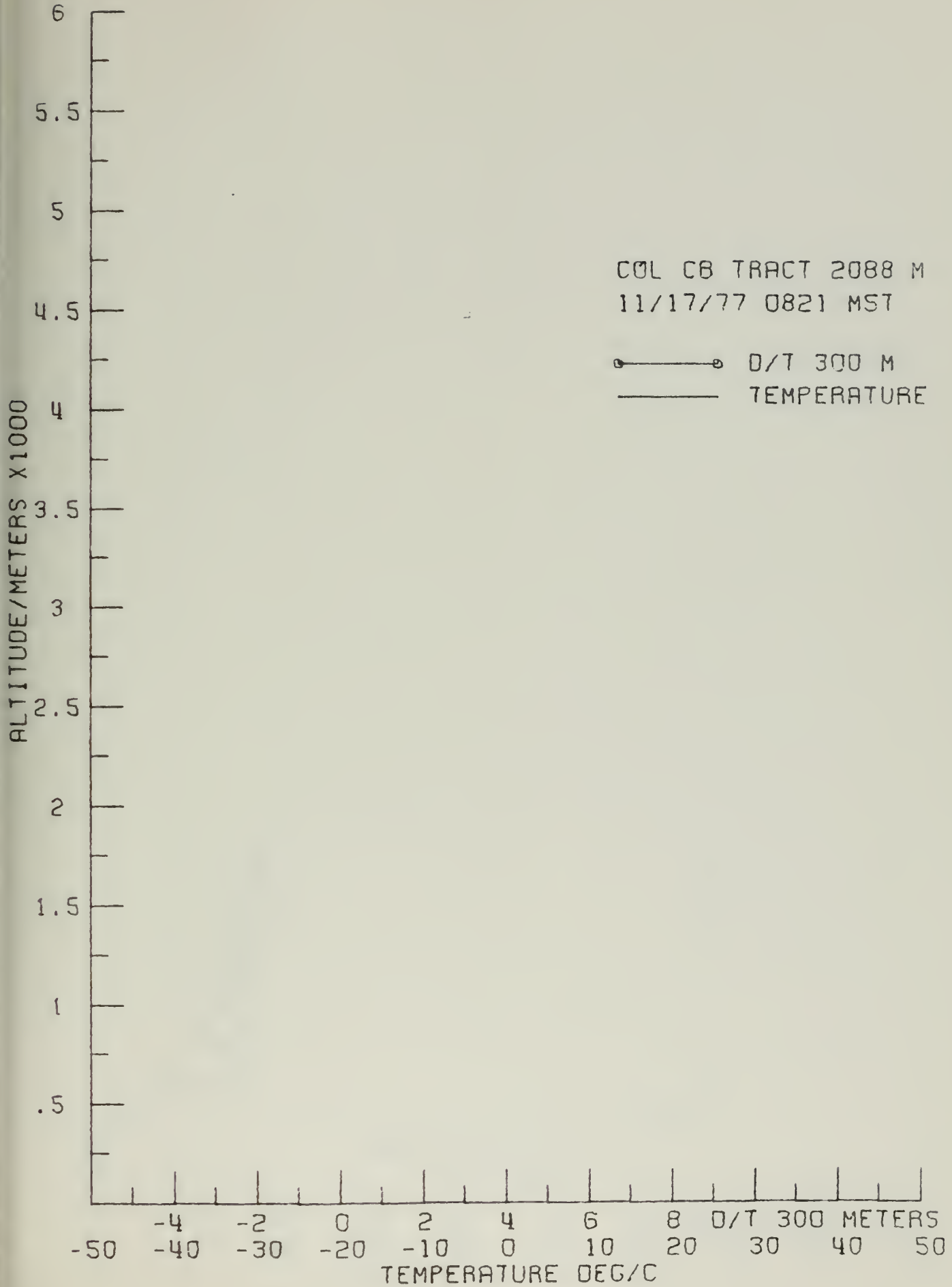
WIND DIRECTION (DEG)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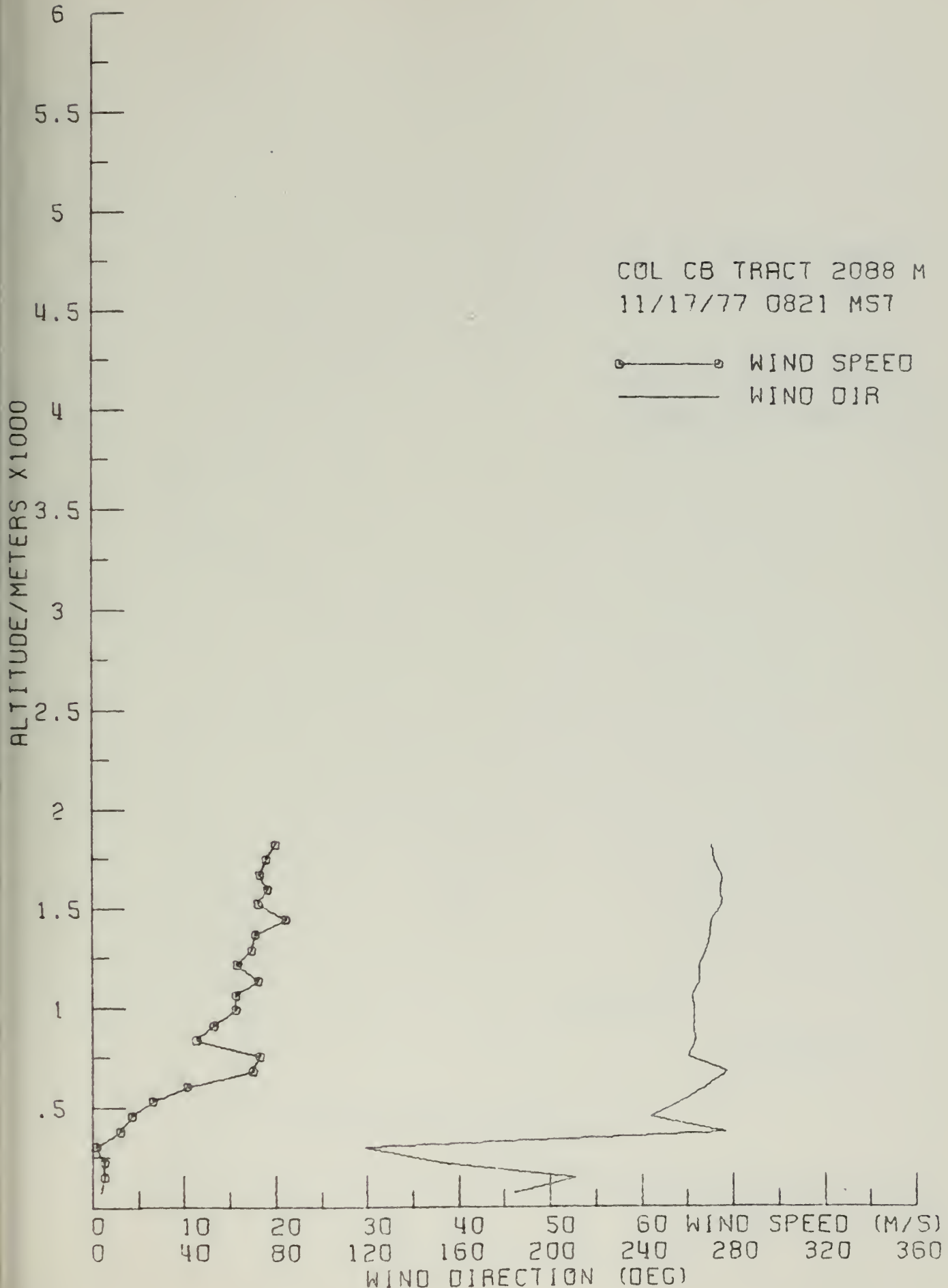
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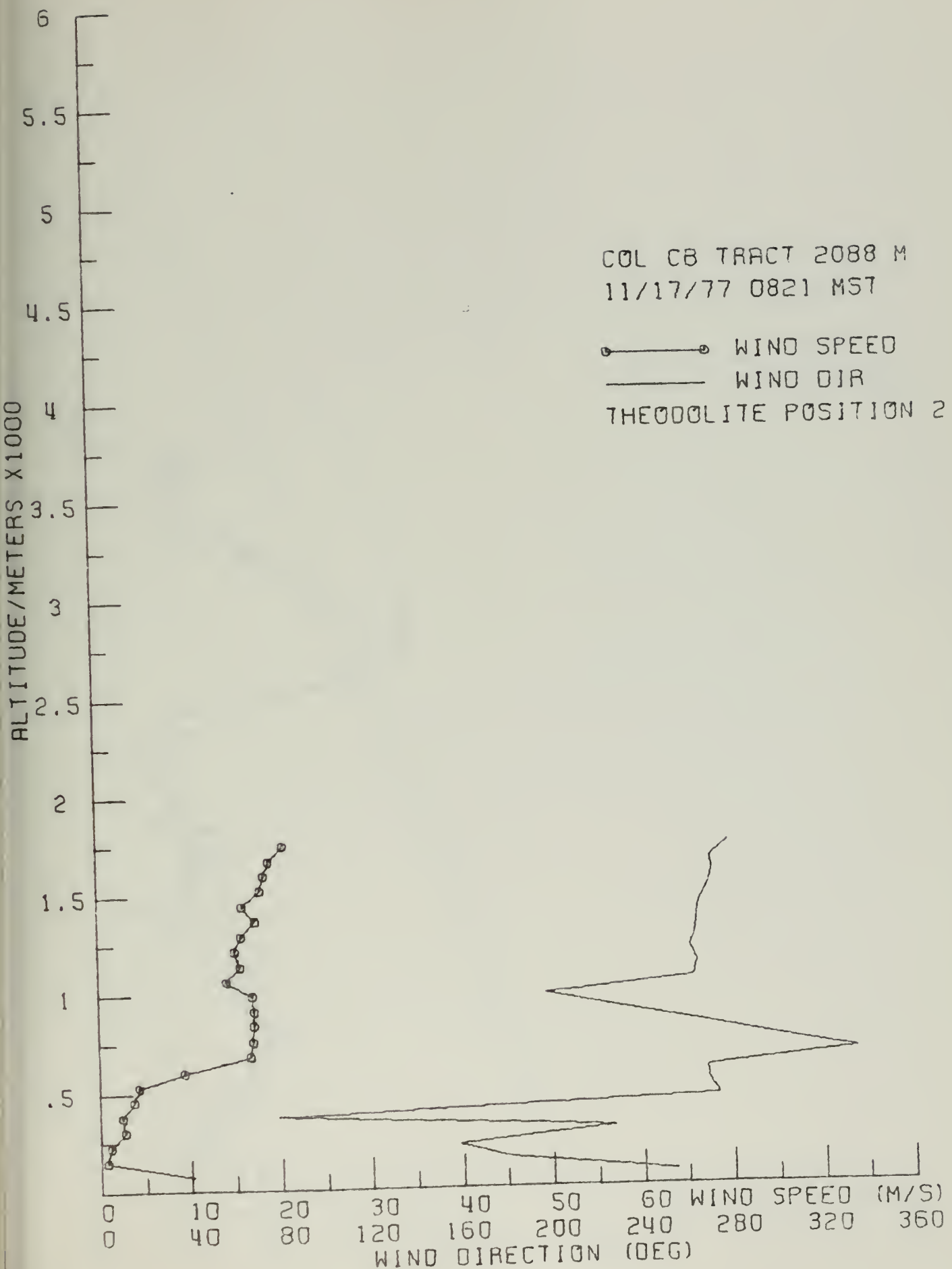
WIND DIRECTION (DEG)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WIND DIR
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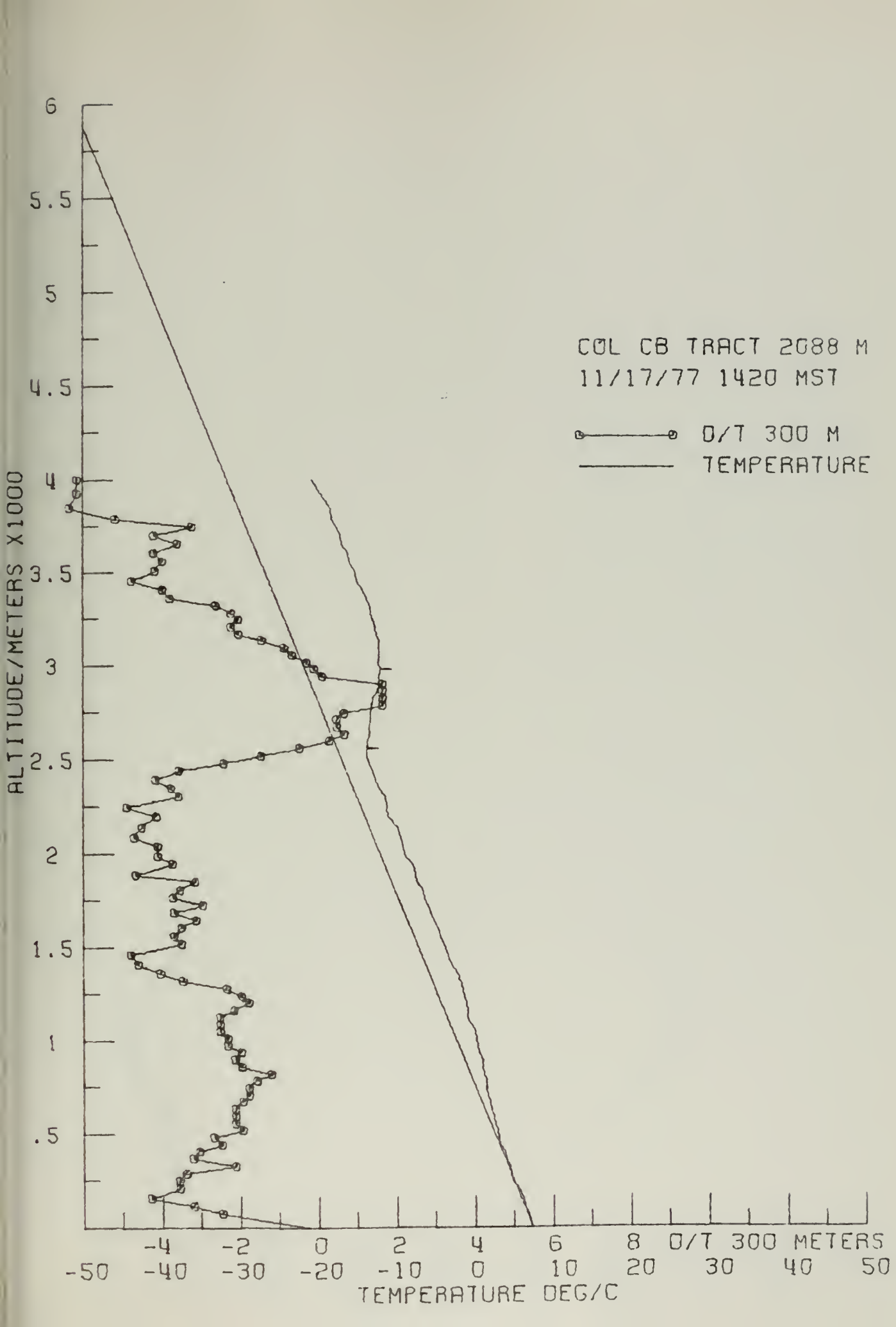
WIND DIRECTION (DEG)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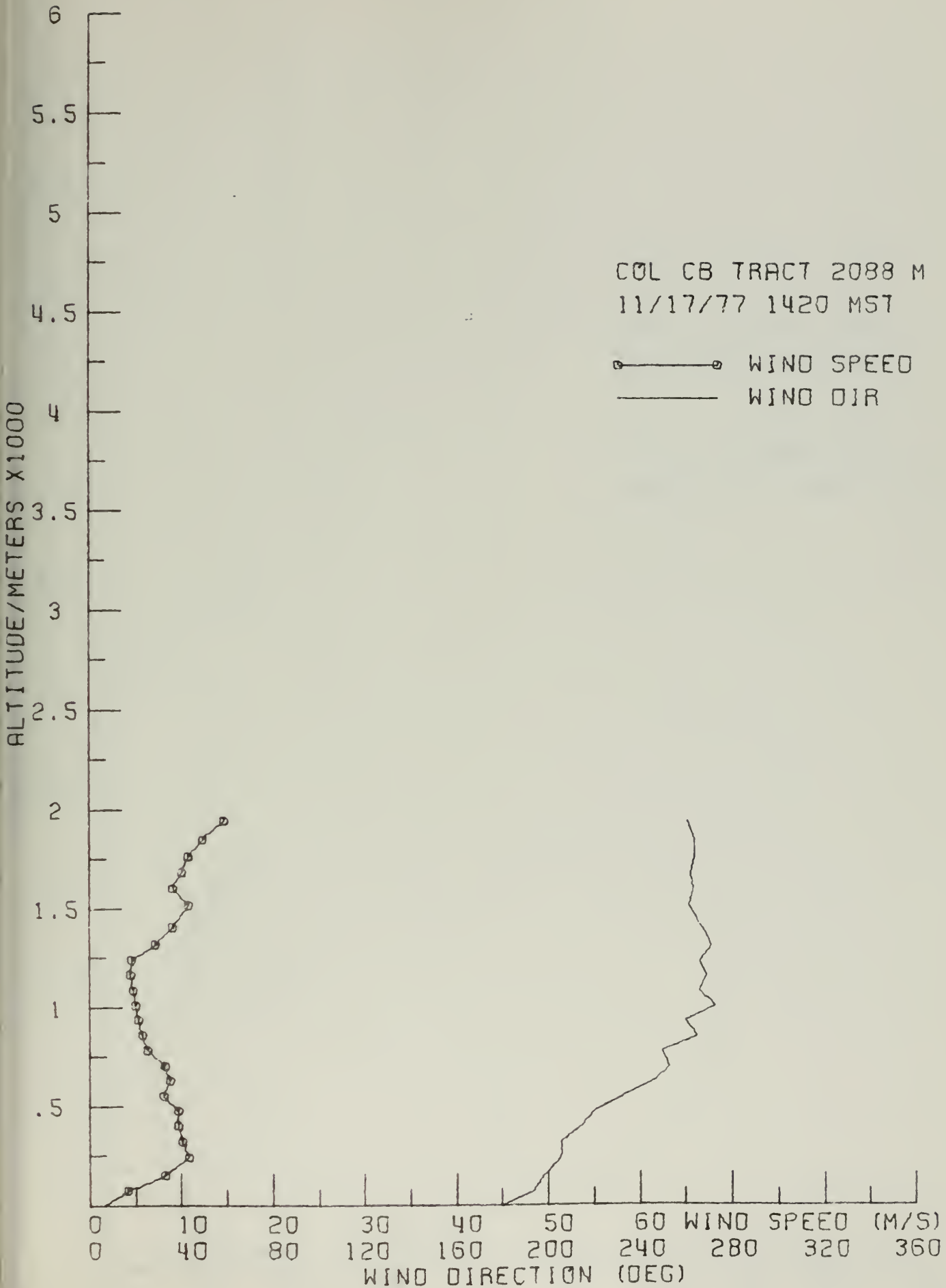
TEMPERATURE DEG/C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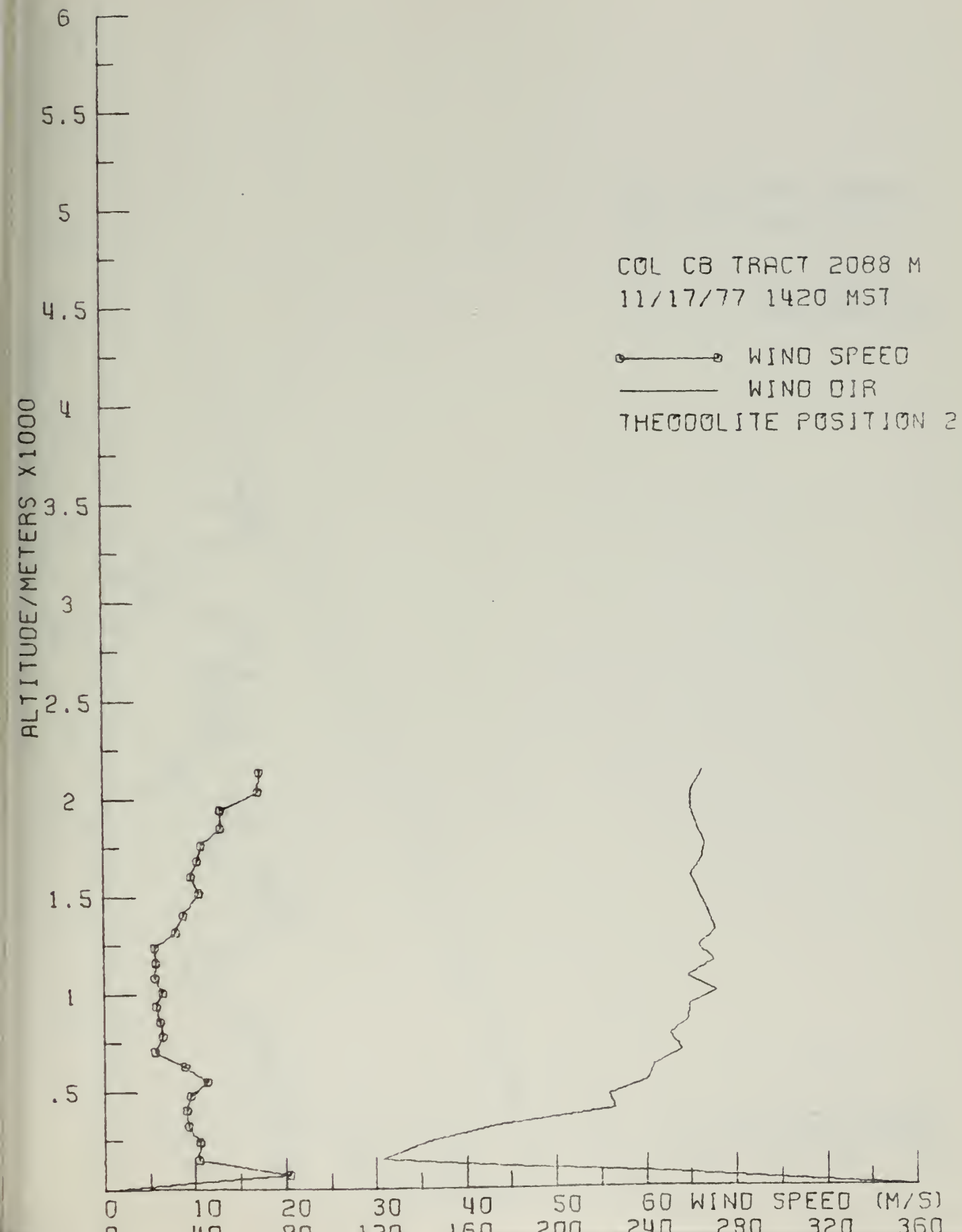
WIND DIRECTION (DEG)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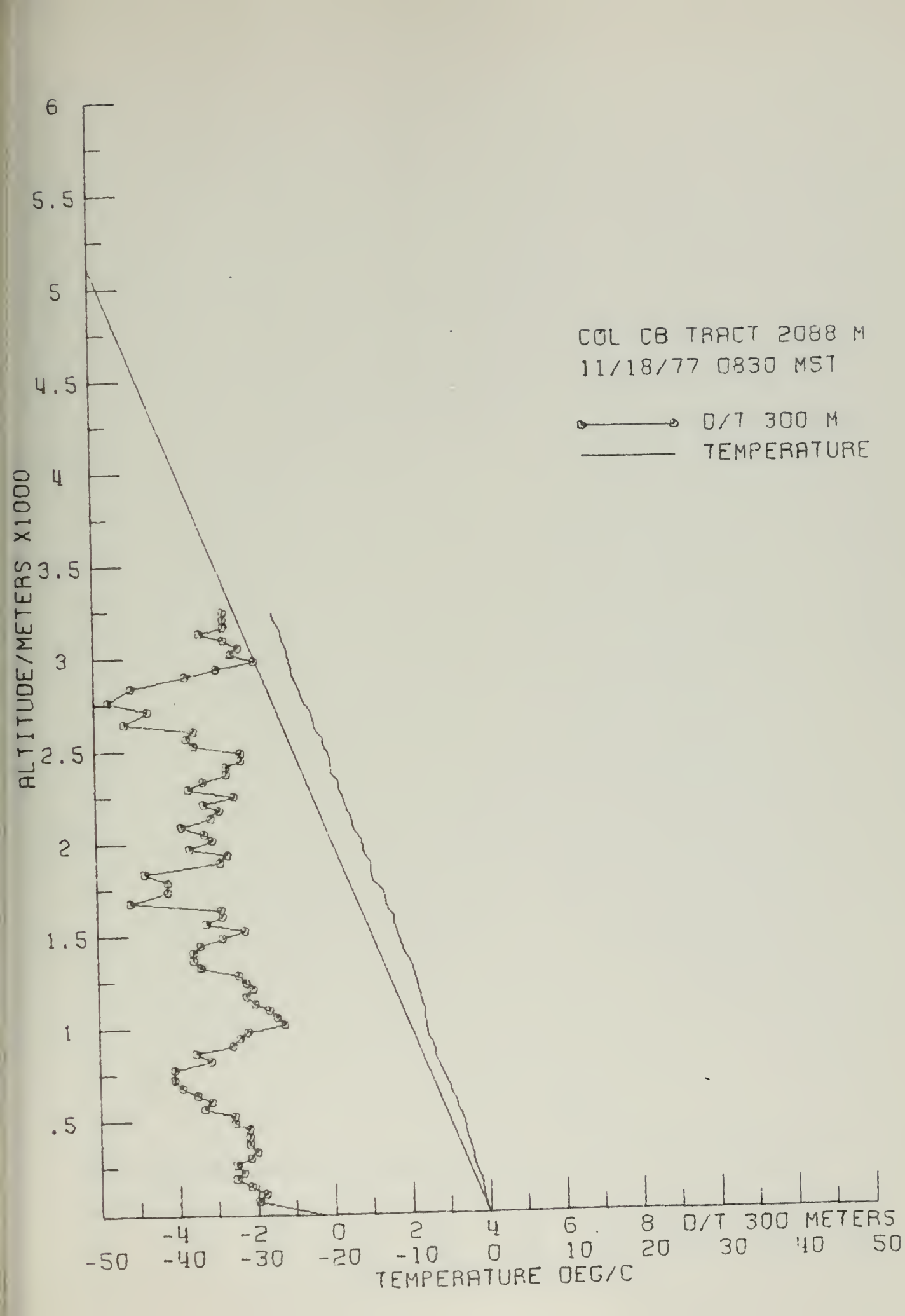
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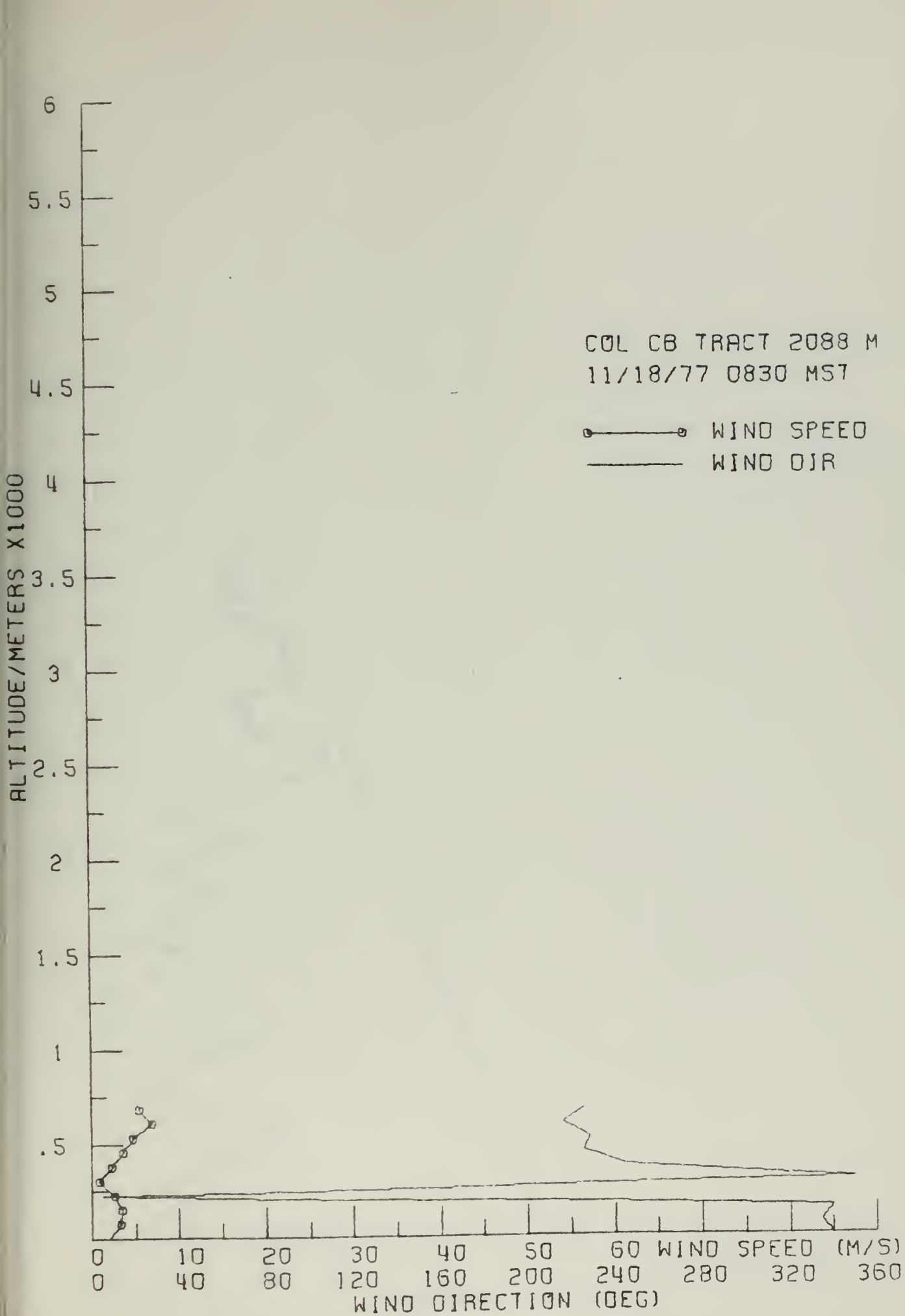
TEMPERATURE DEG/C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ALTITUDE/METERS X1000
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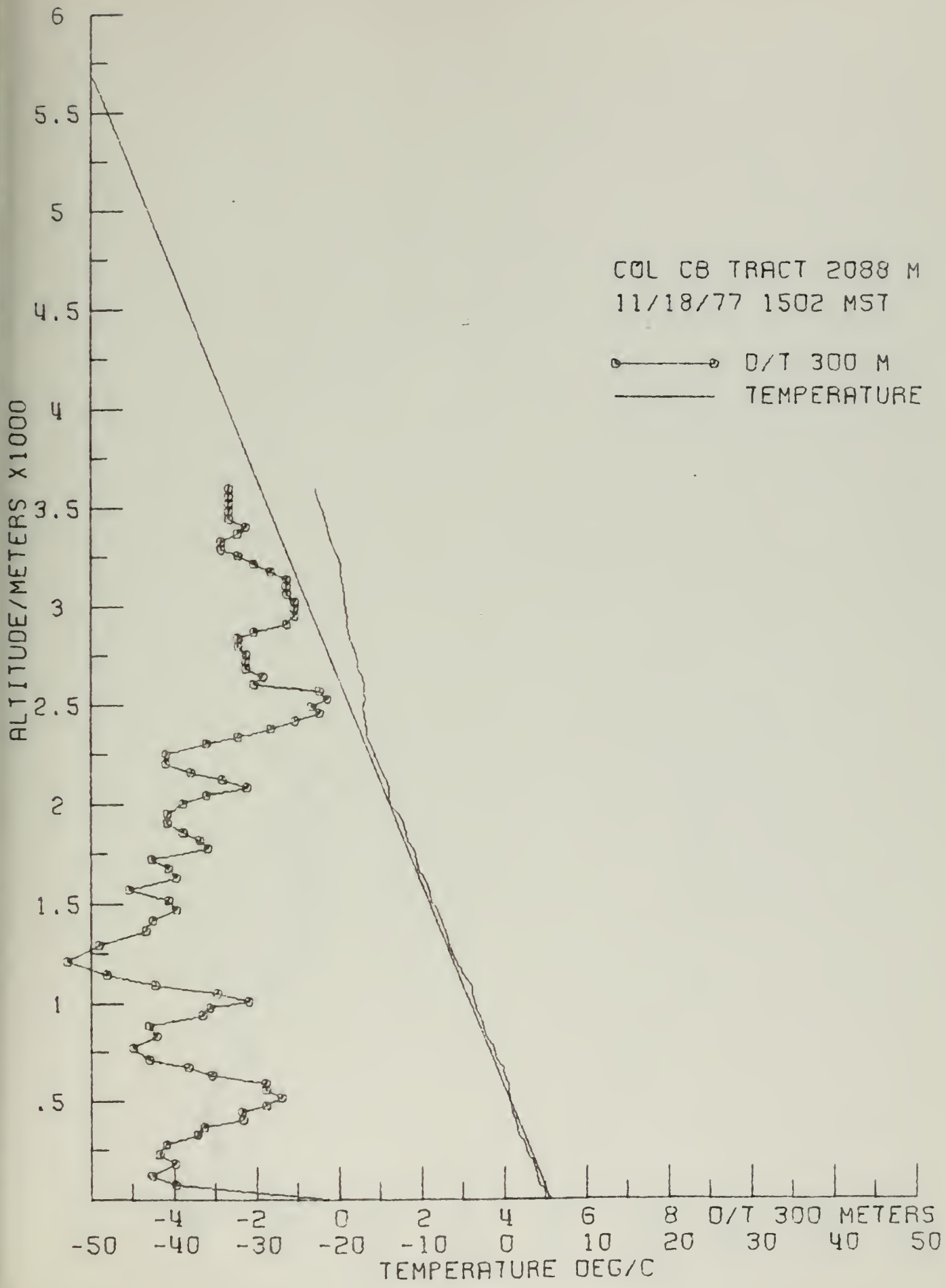
WIND DIRECTION (DEG)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11/18/77 1502 MST
O/T 300 M
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ALTITUDE/METERS X1000
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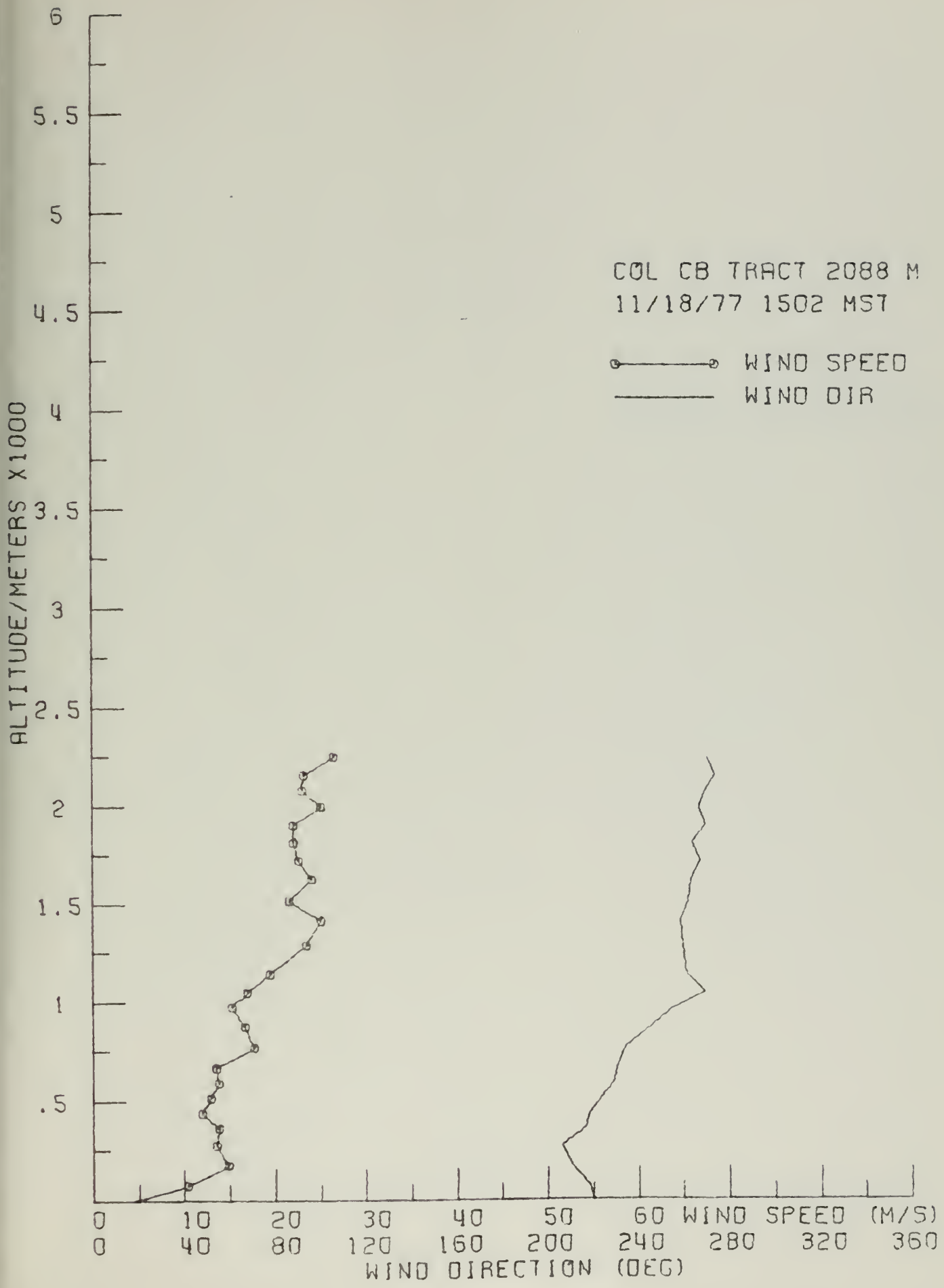
TEMPERATURE DEG/C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WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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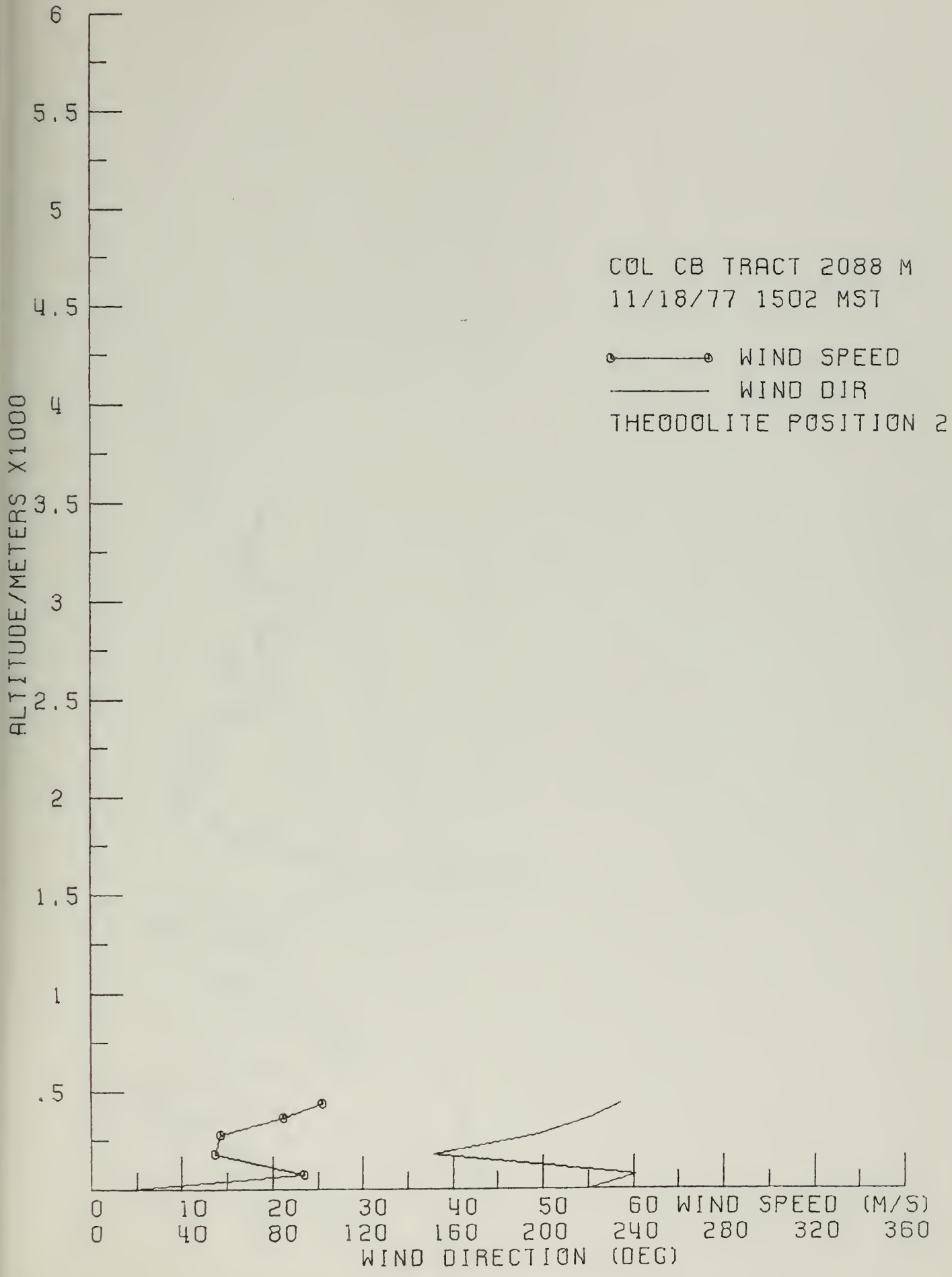
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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11/18/77 1502 MST
WIND SPEED
WIND DIR
THEODOLITE POSITION 2
ALTITUDE/METERS X1000
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4.5
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2.5
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1.5
1
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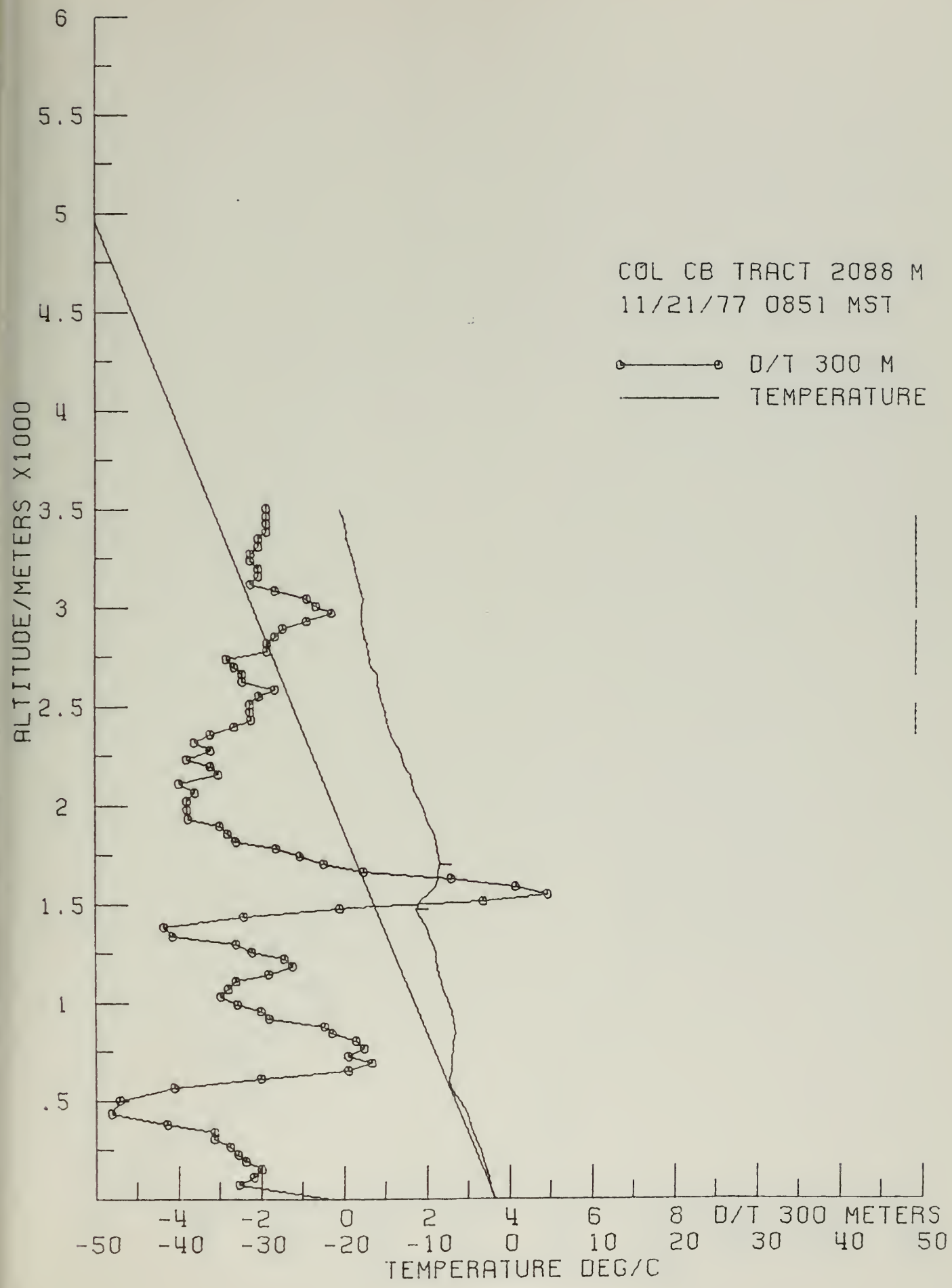
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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11/21/77 0851 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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4.5
4
3.5
3
2.5
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1.5
1
.5
-4
-2
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2
4
6
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D/T 300 METERS
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-40
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-10
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20
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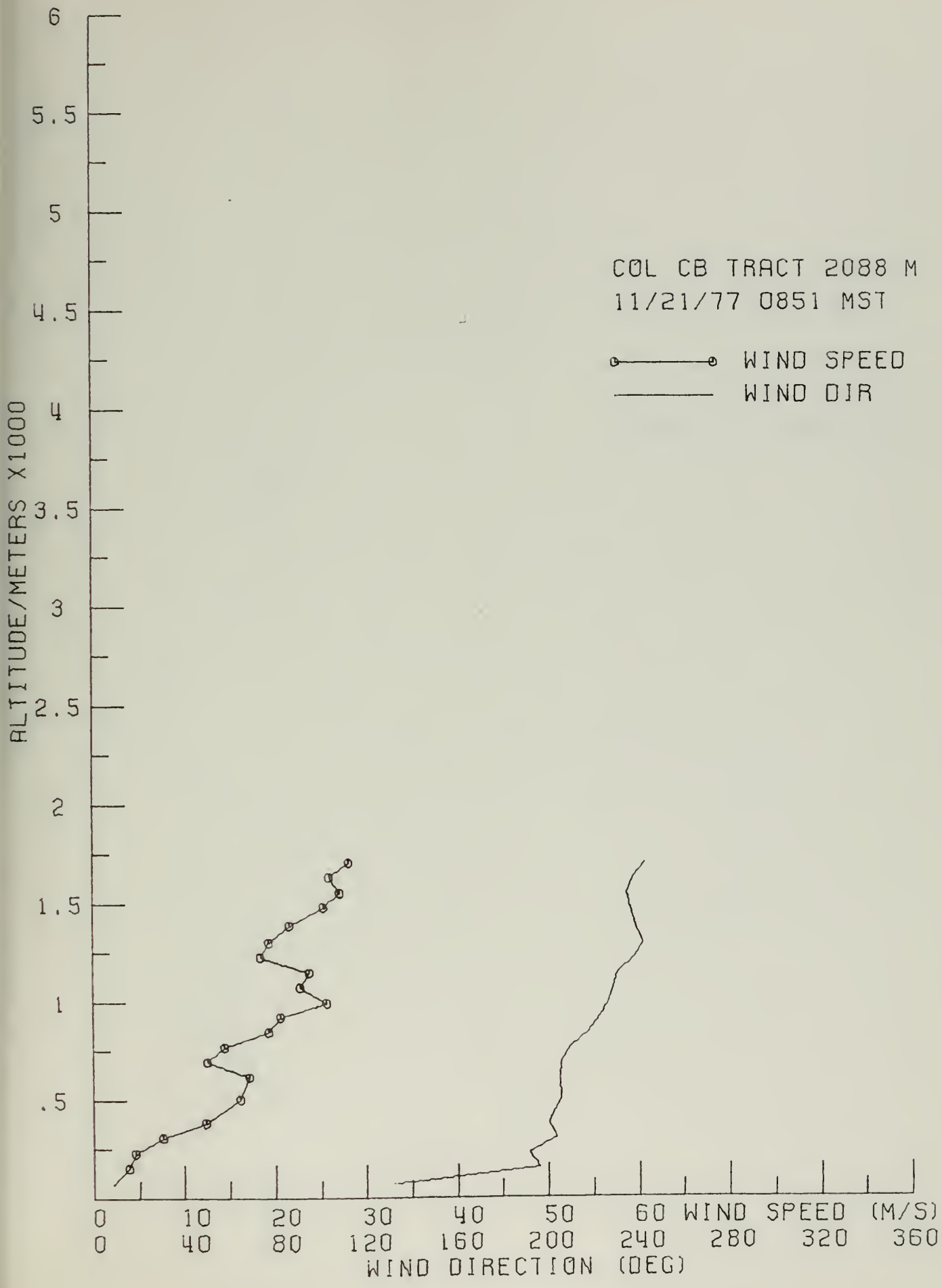
50
TEMPERATURE DEG/C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11/21/77 0851 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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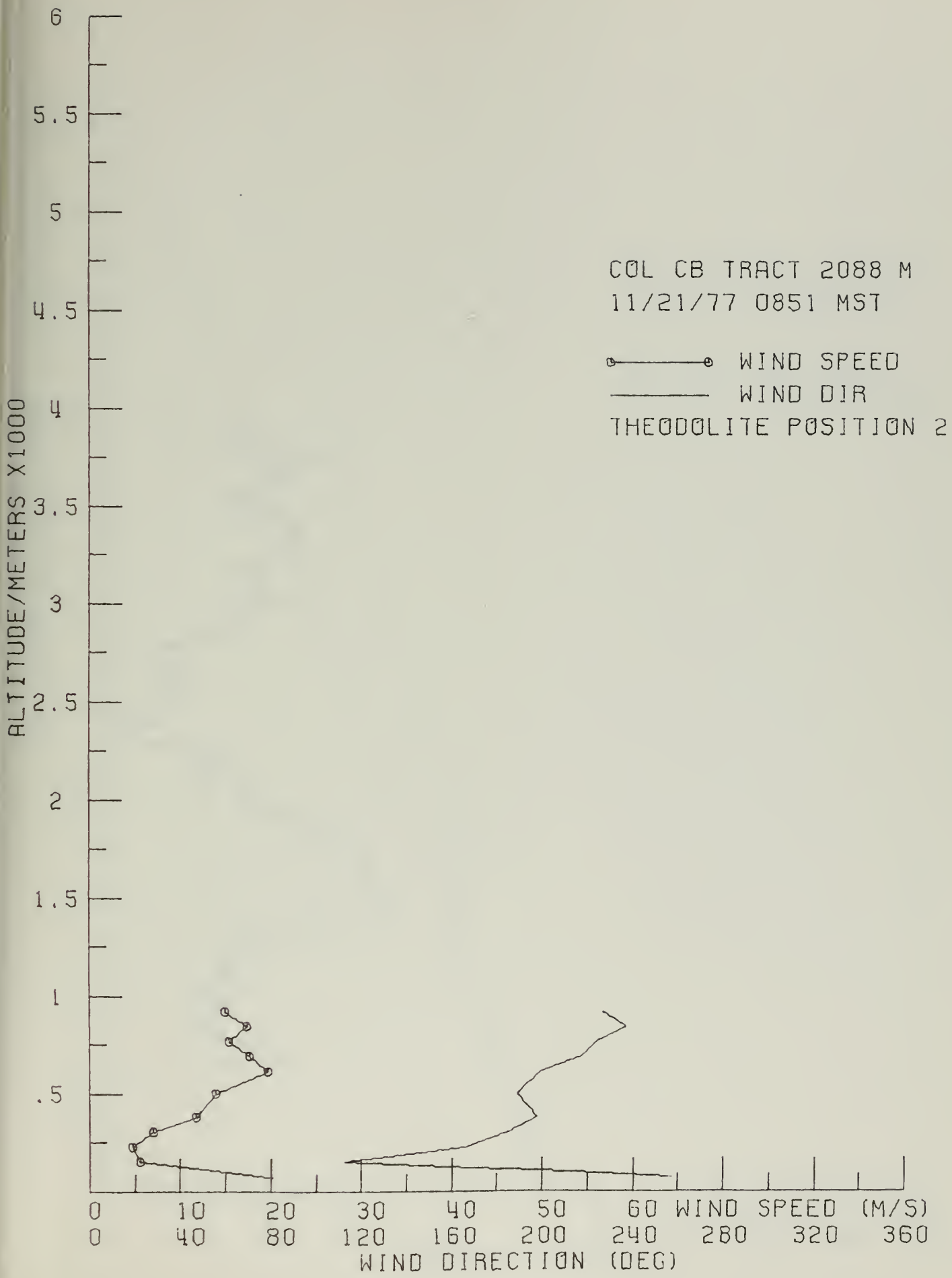
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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WIND SPEED
WIND DIR
THEODOLITE POSITION 2
ALTITUDE/METERS X1000
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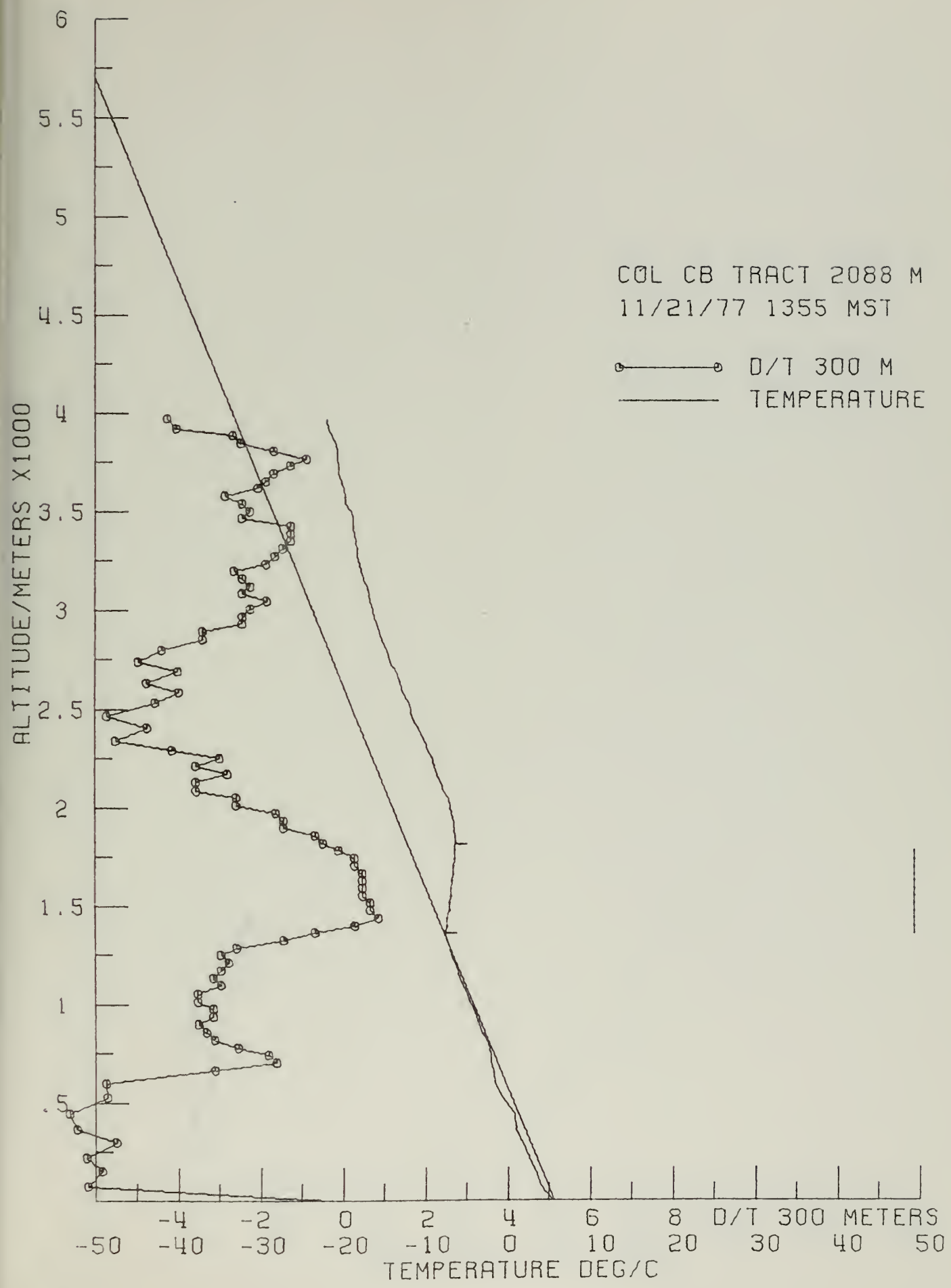
WIND DIRECTION (DEG)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11/21/77 1355 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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D/T 300 METERS
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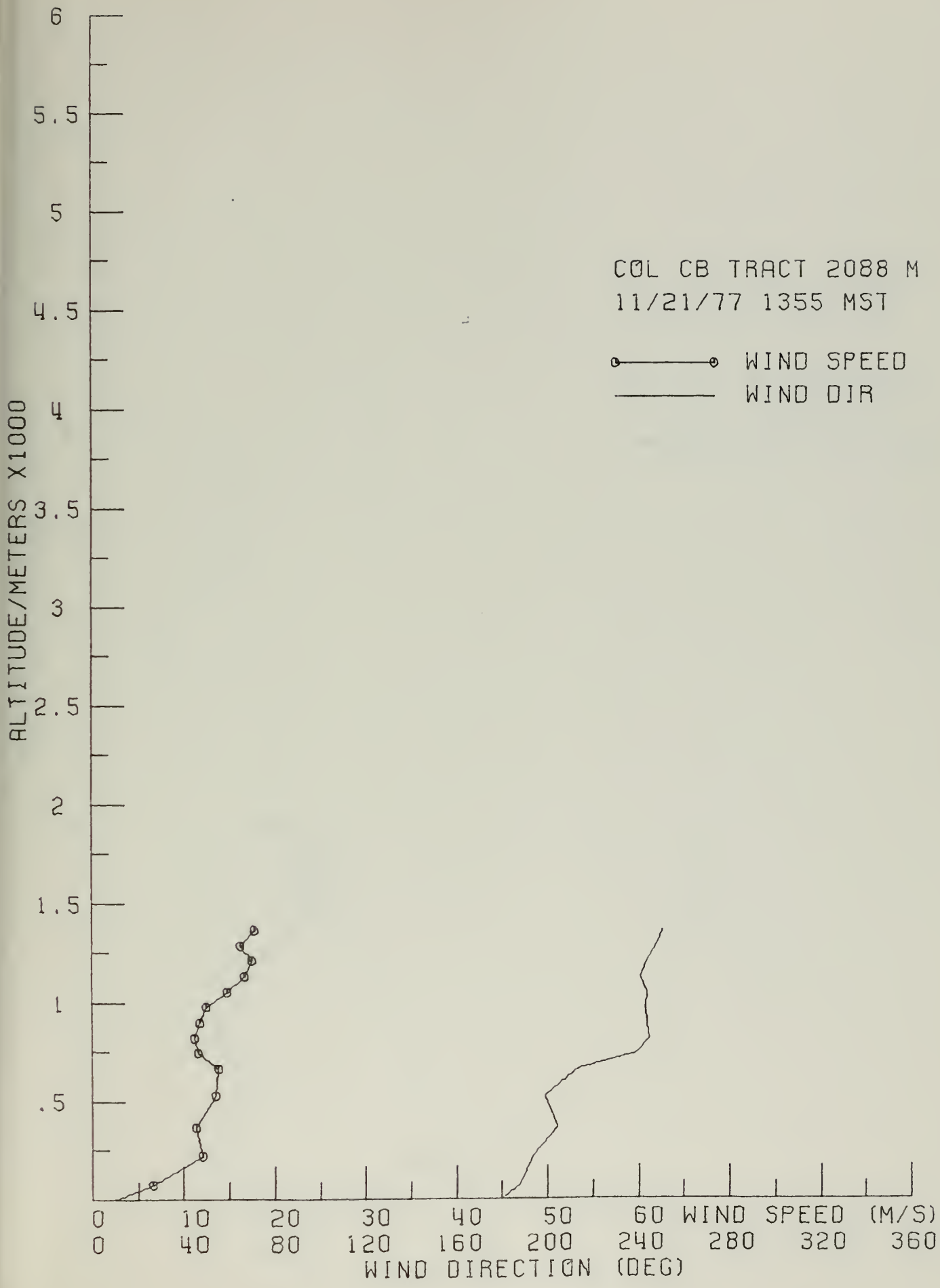
50
TEMPERATURE DEG/C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11/21/77 1355 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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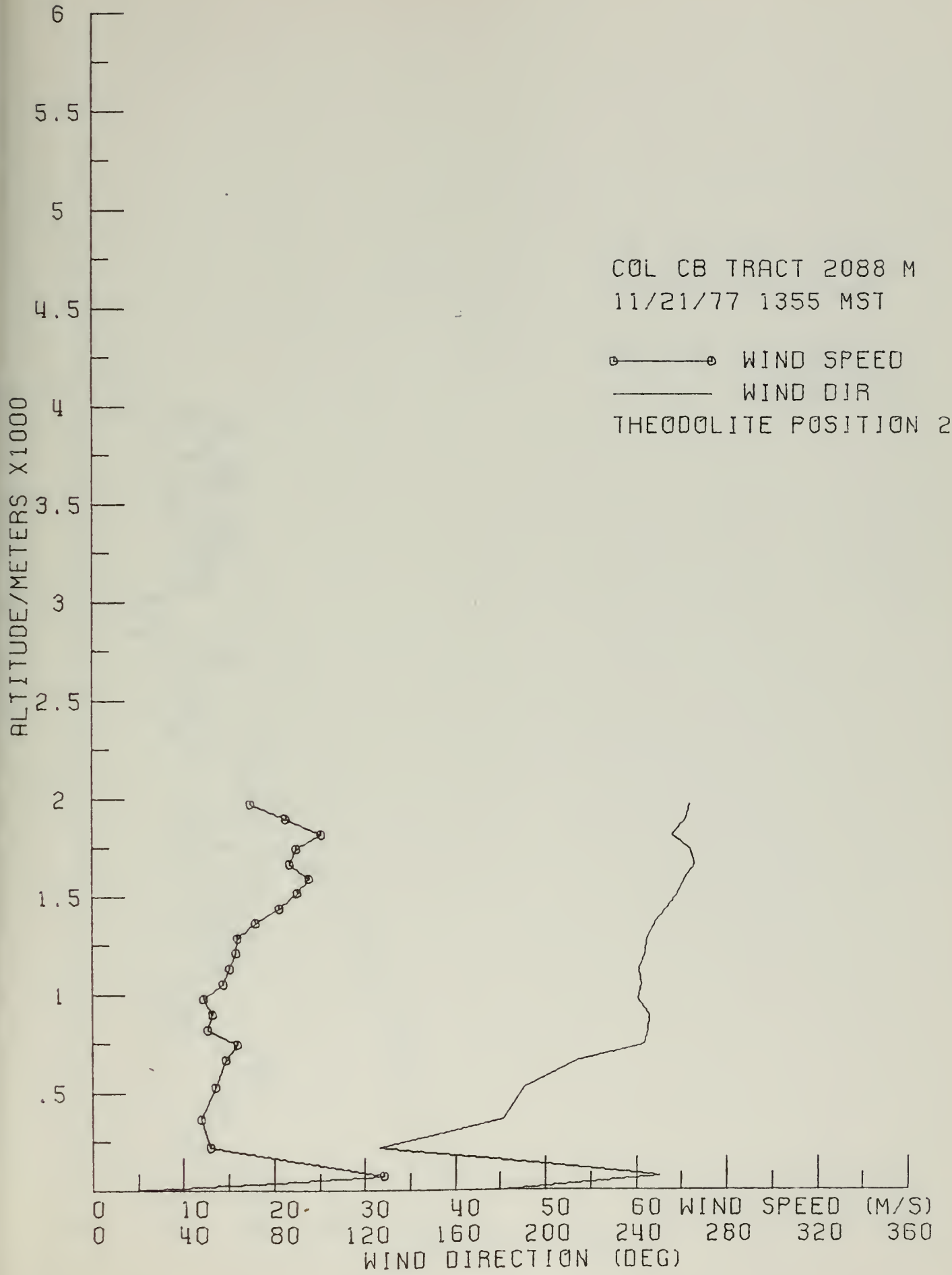
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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11/21/77 1355 MST
WIND SPEED
WIND DIR
THEODOLITE POSITION 2
ALTITUDE/METERS X1000
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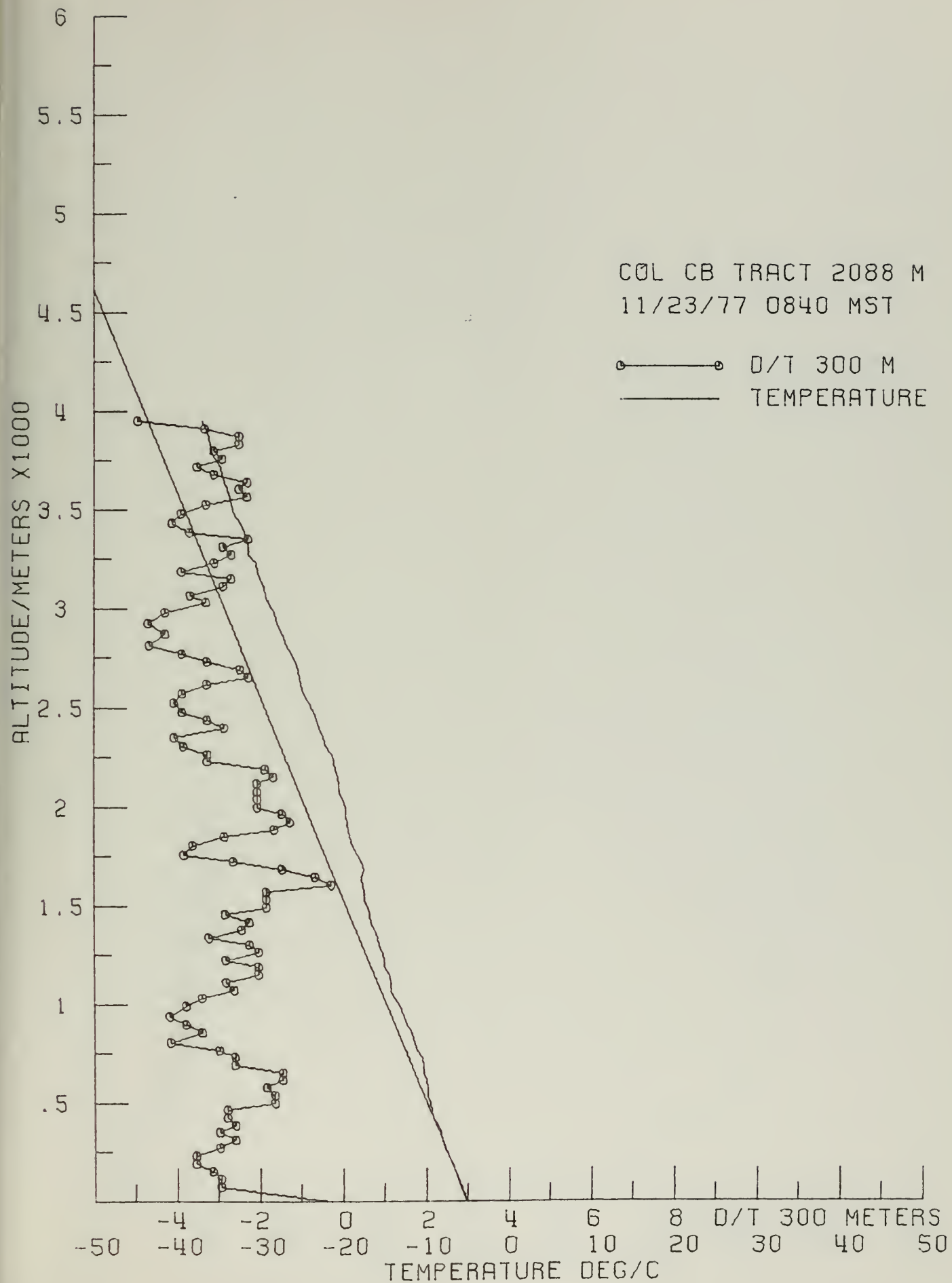
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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ALTITUDE/METERS X1000
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2
4
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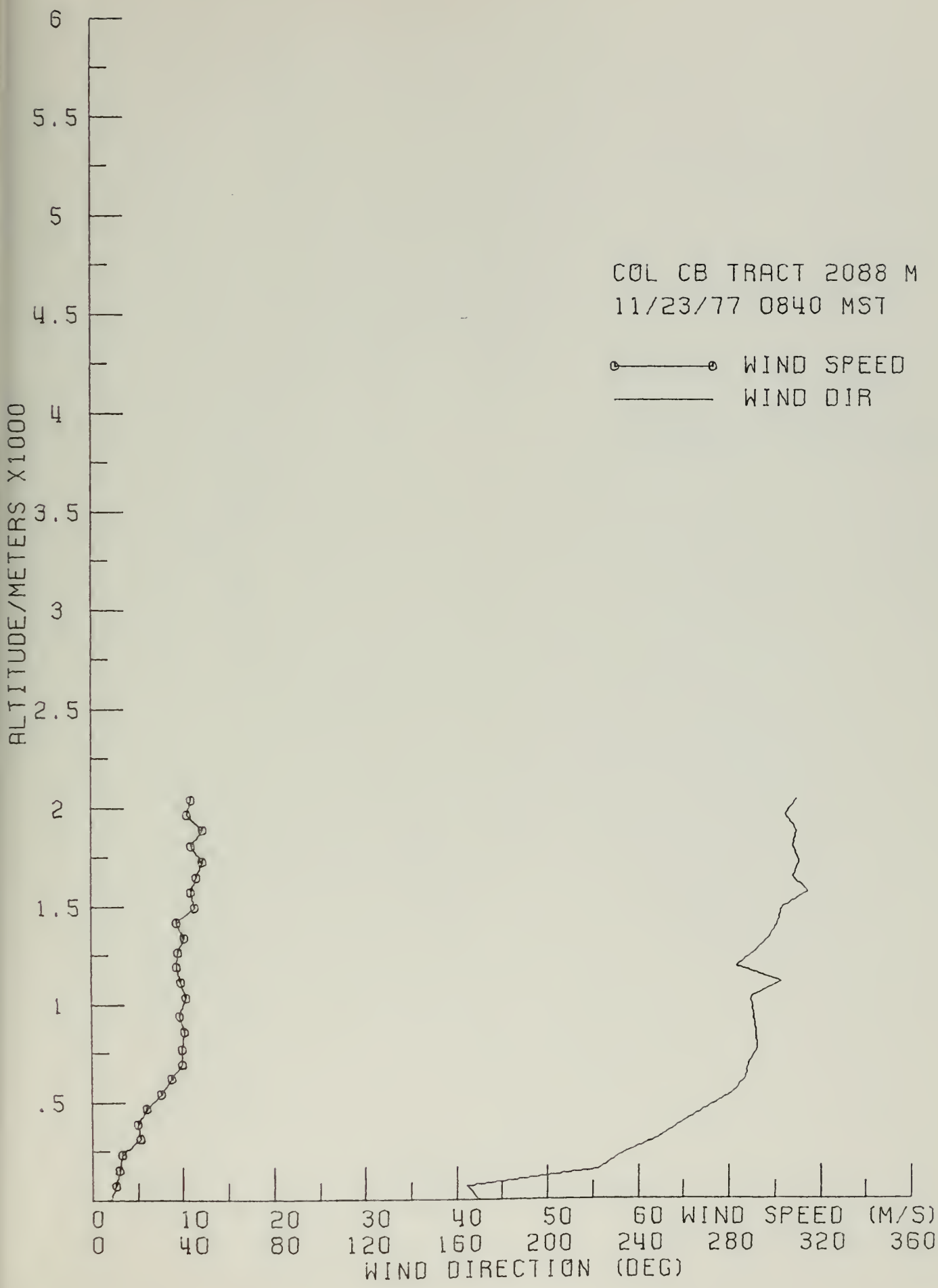
TEMPERATURE DEG/C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WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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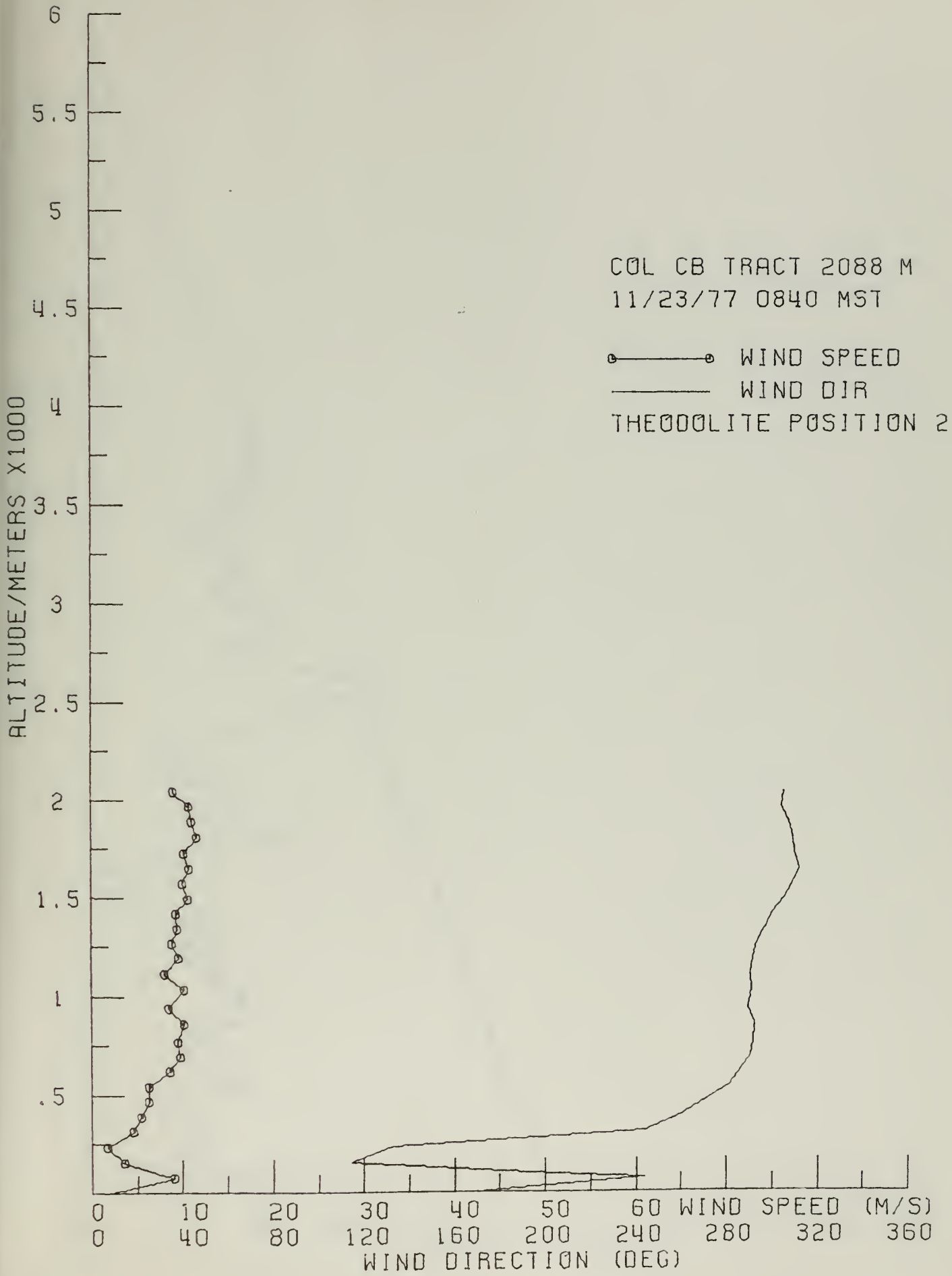
WIND DIRECTION (DEG)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WIND SPEED
WIND DIR
THEODOLITE POSITION 2
ALTITUDE/METERS X1000
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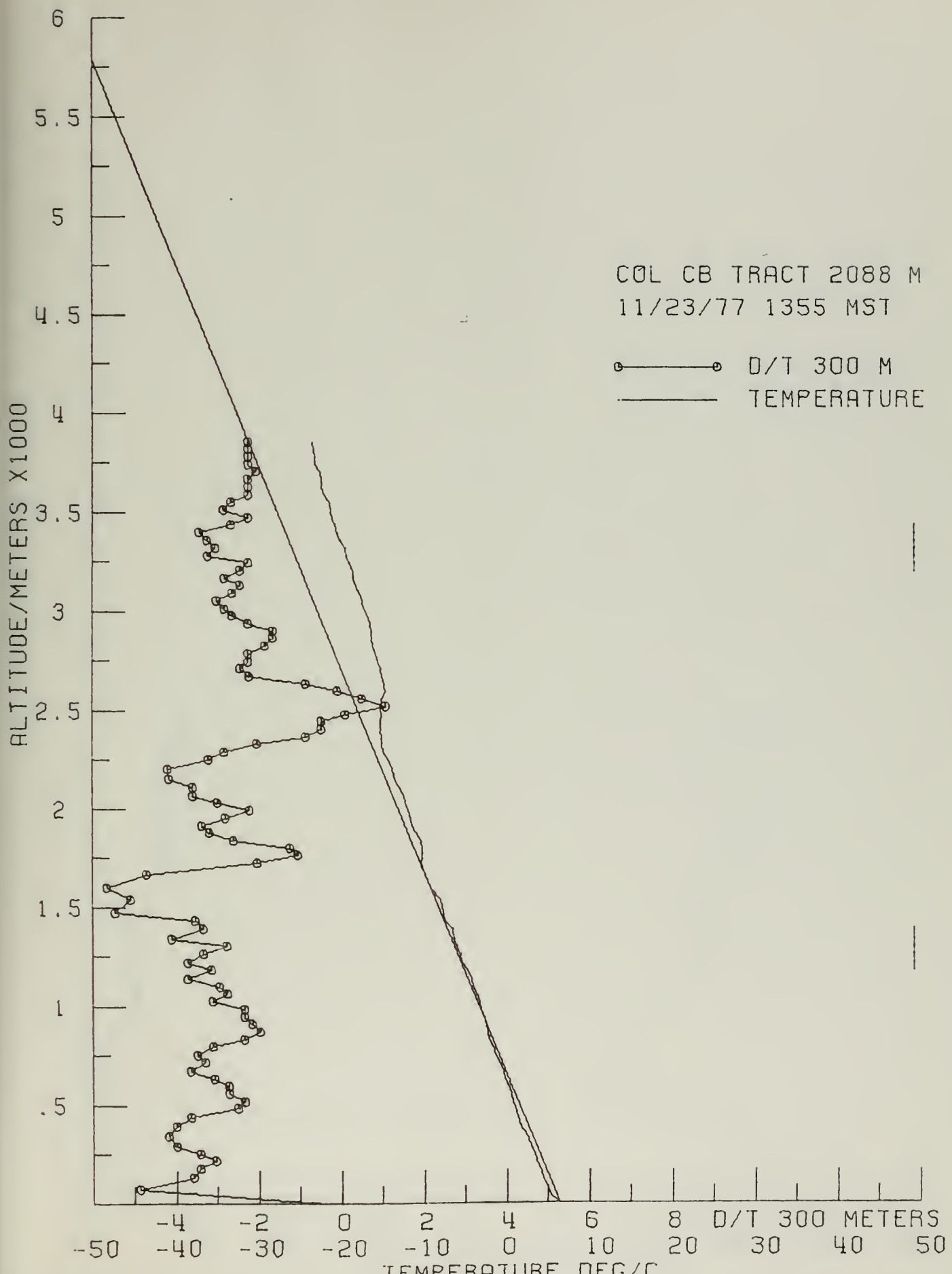
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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11/23/77 1355 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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D/T 300 METERS
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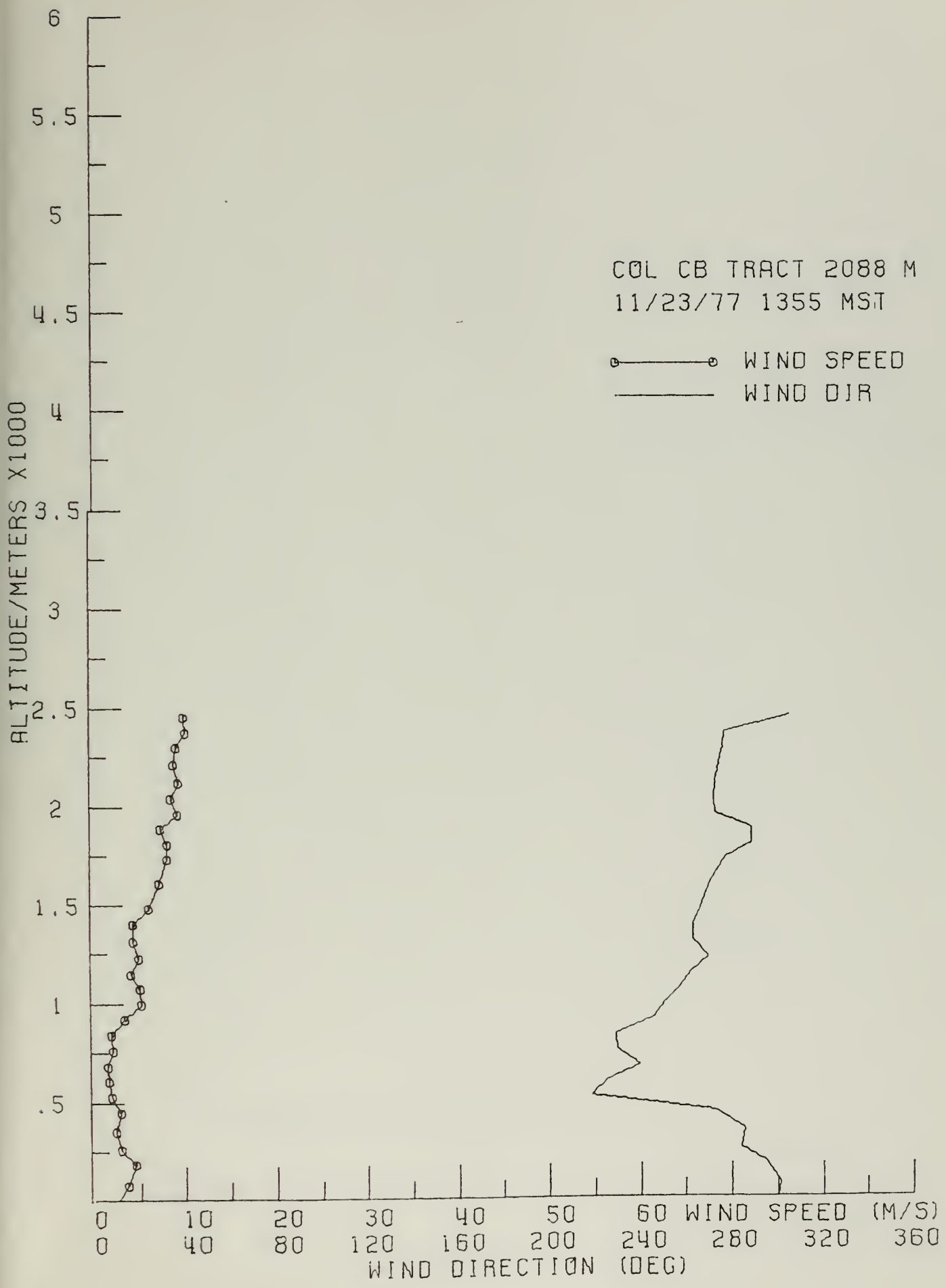
TEMPERATURE DEG/C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11/23/77 1355 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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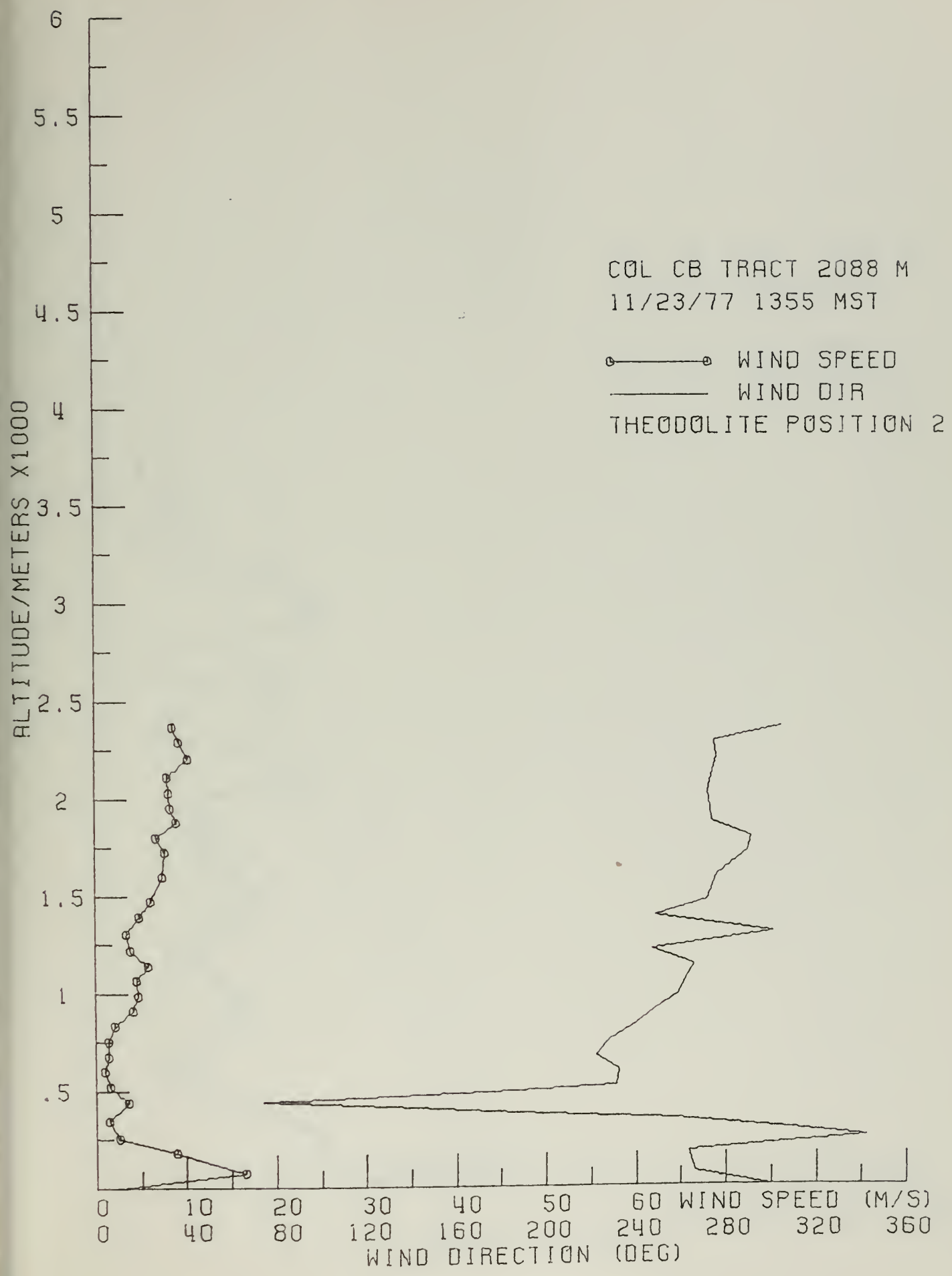
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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11/23/77 1355 MST
WIND SPEED
WIND DIR
THEODOLITE POSITION 2
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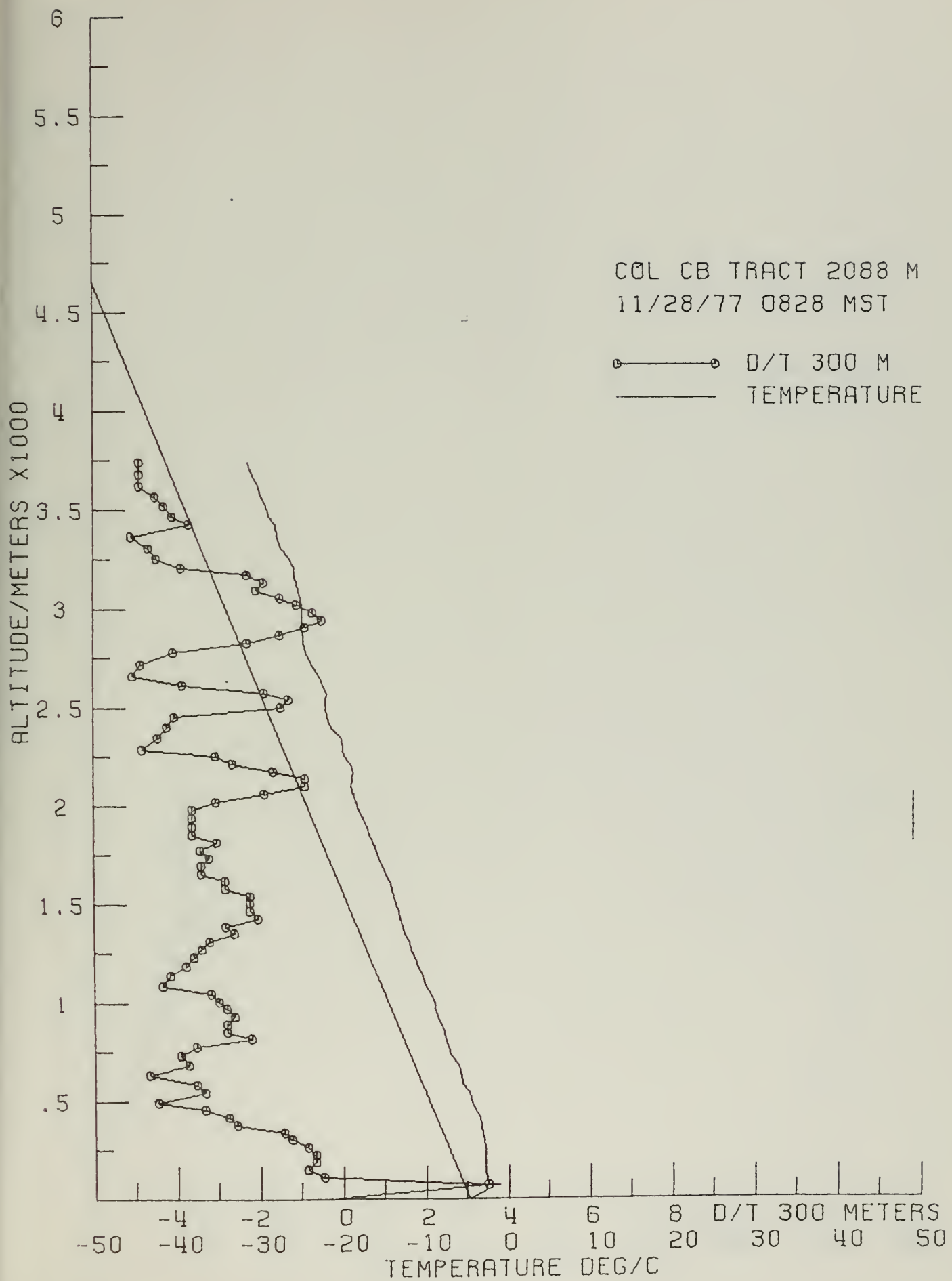
WIND DIRECTION (DEG)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11/28/77 0828 MST
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TEMPERATURE DEG/C
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-2
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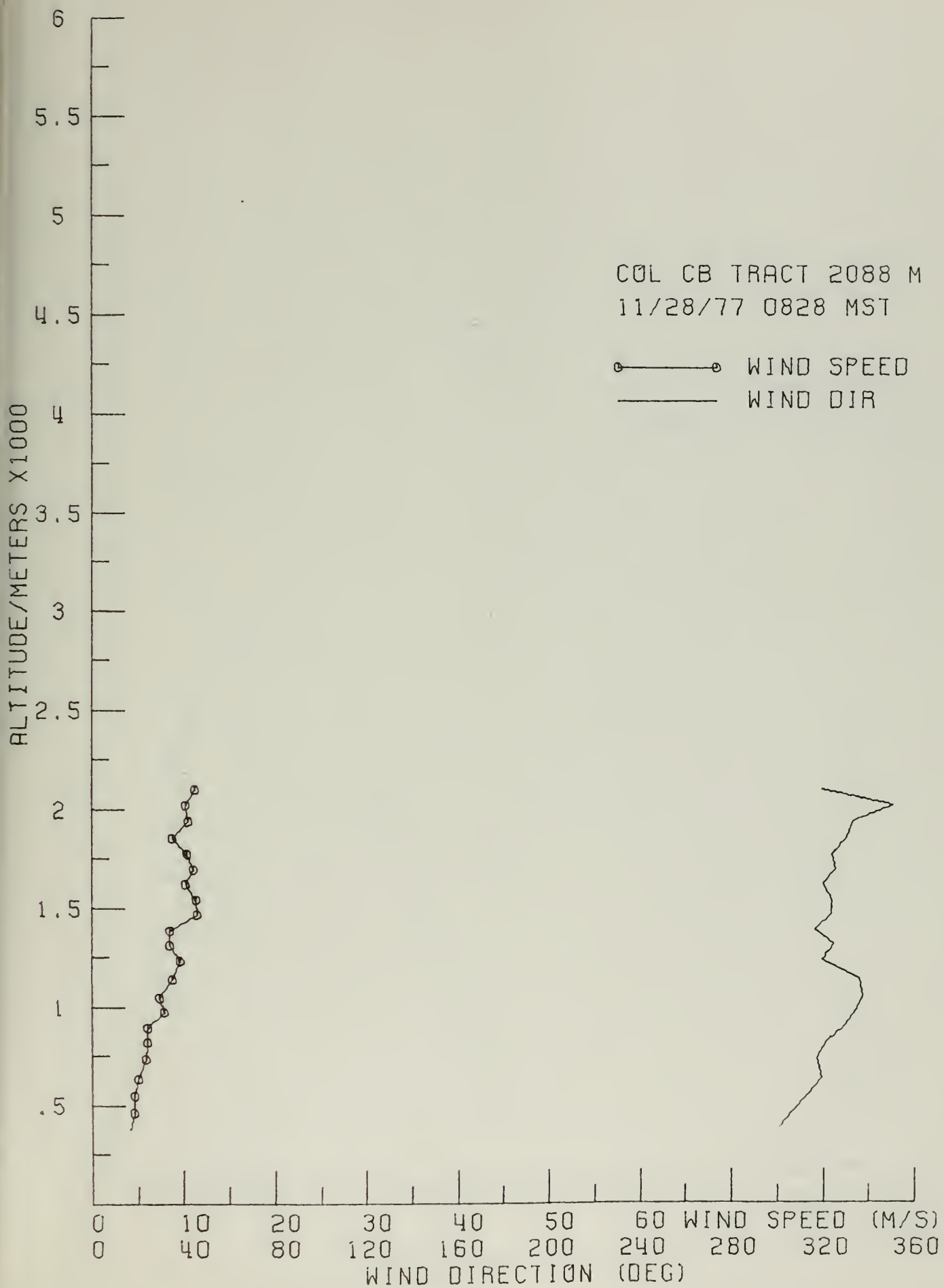
6
8
D/T 300 METERS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WIND SPEED
WIND DIR
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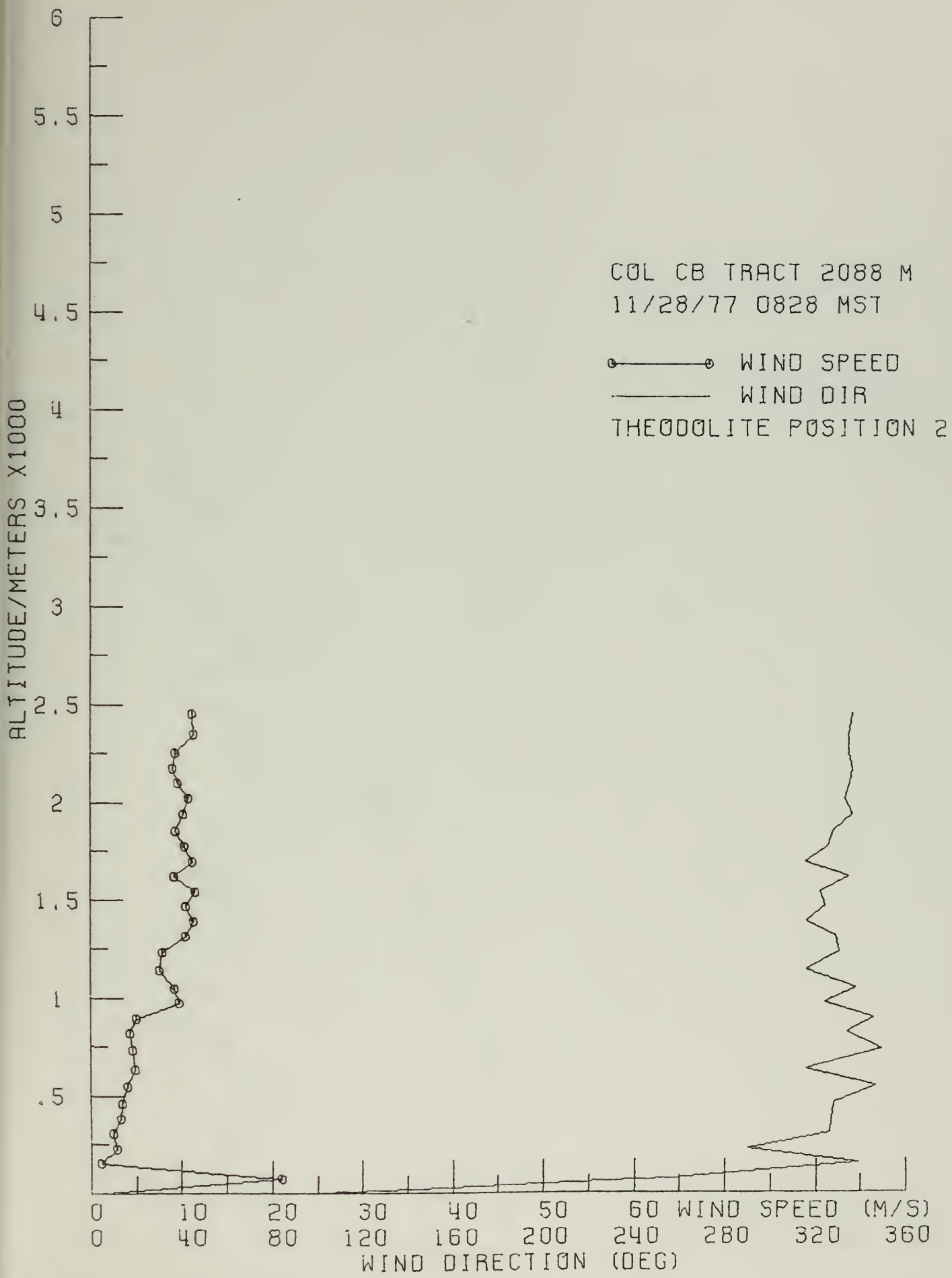
WIND DIRECTION (DEG)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11/28/77 0828 MST
WIND SPEED
WIND DIR
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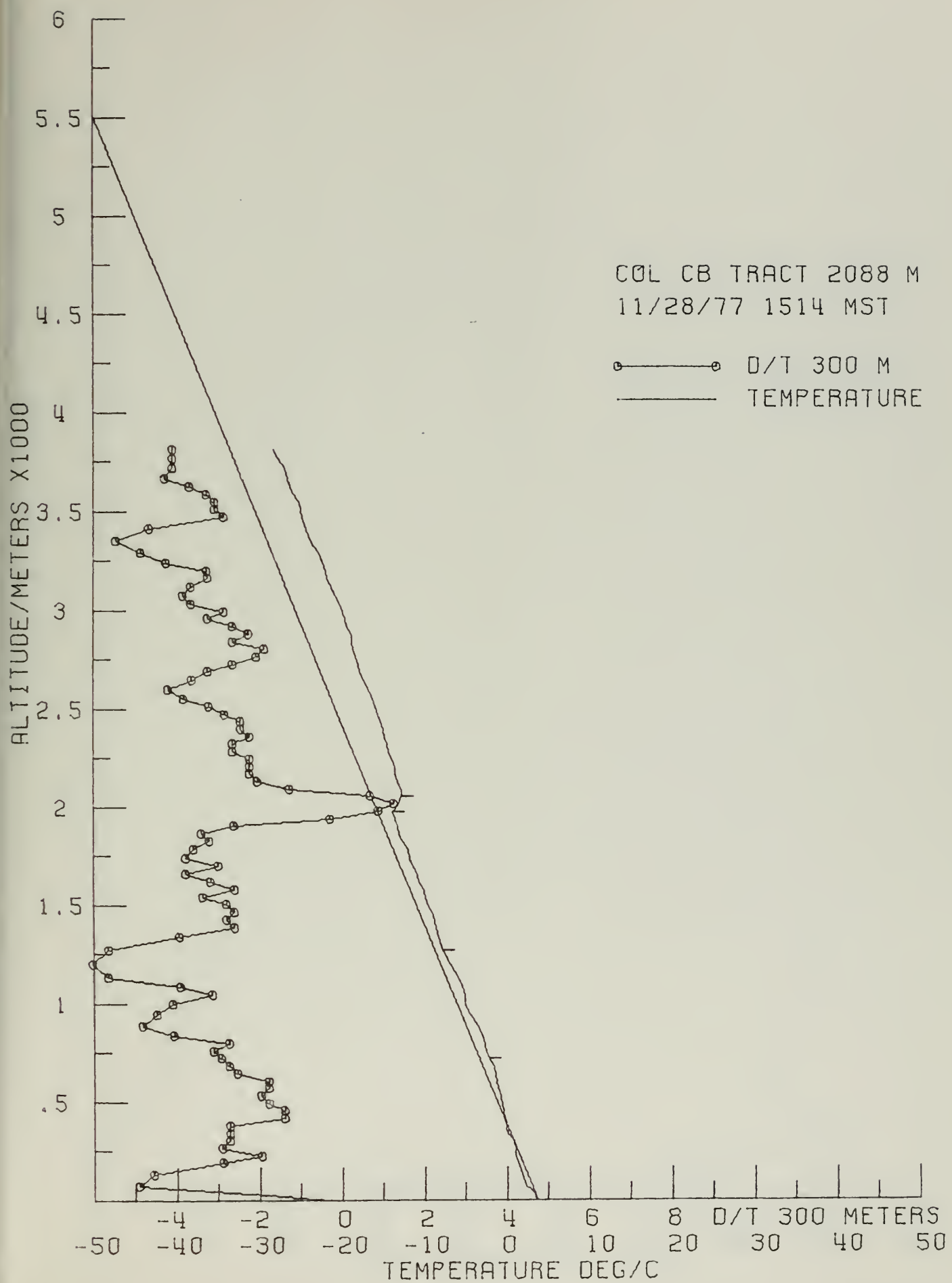
WIND DIRECTION (DEG)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D/T 300 METERS
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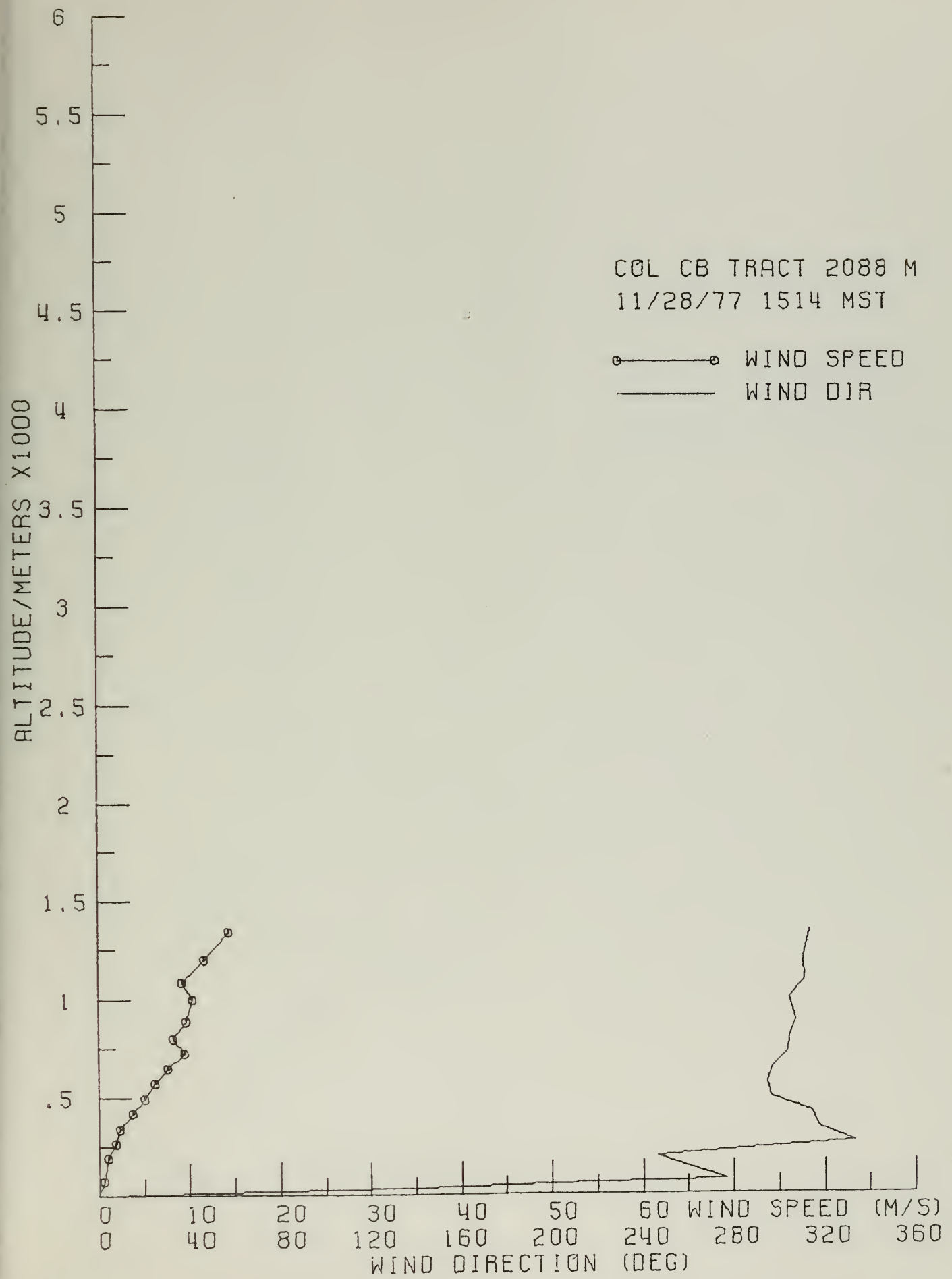
TEMPERATURE DEG/C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WIND SPEED
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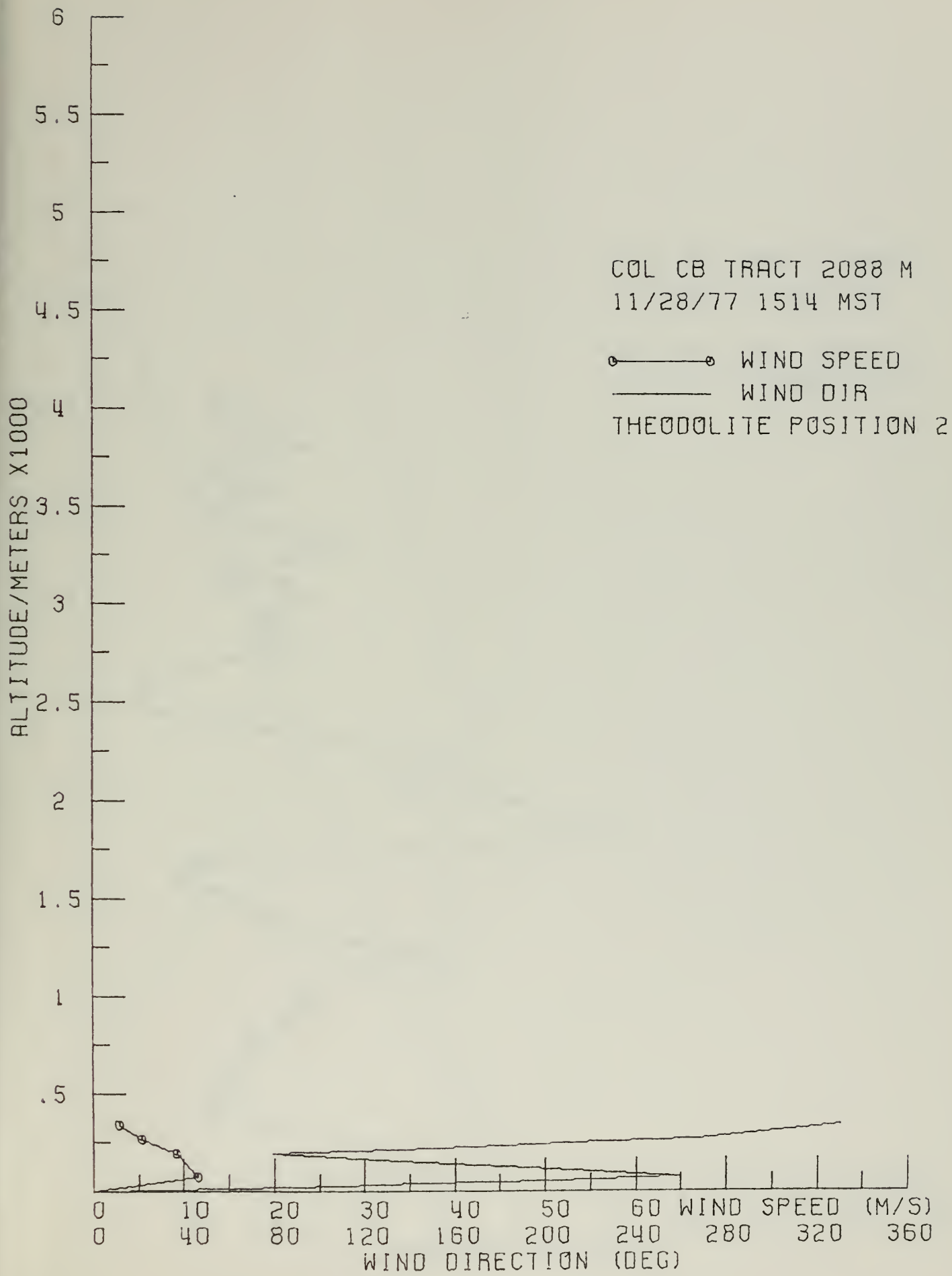
WIND DIRECTION (DEG)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WIND SPEED
WIND DIR
THEODOLITE POSITION 2
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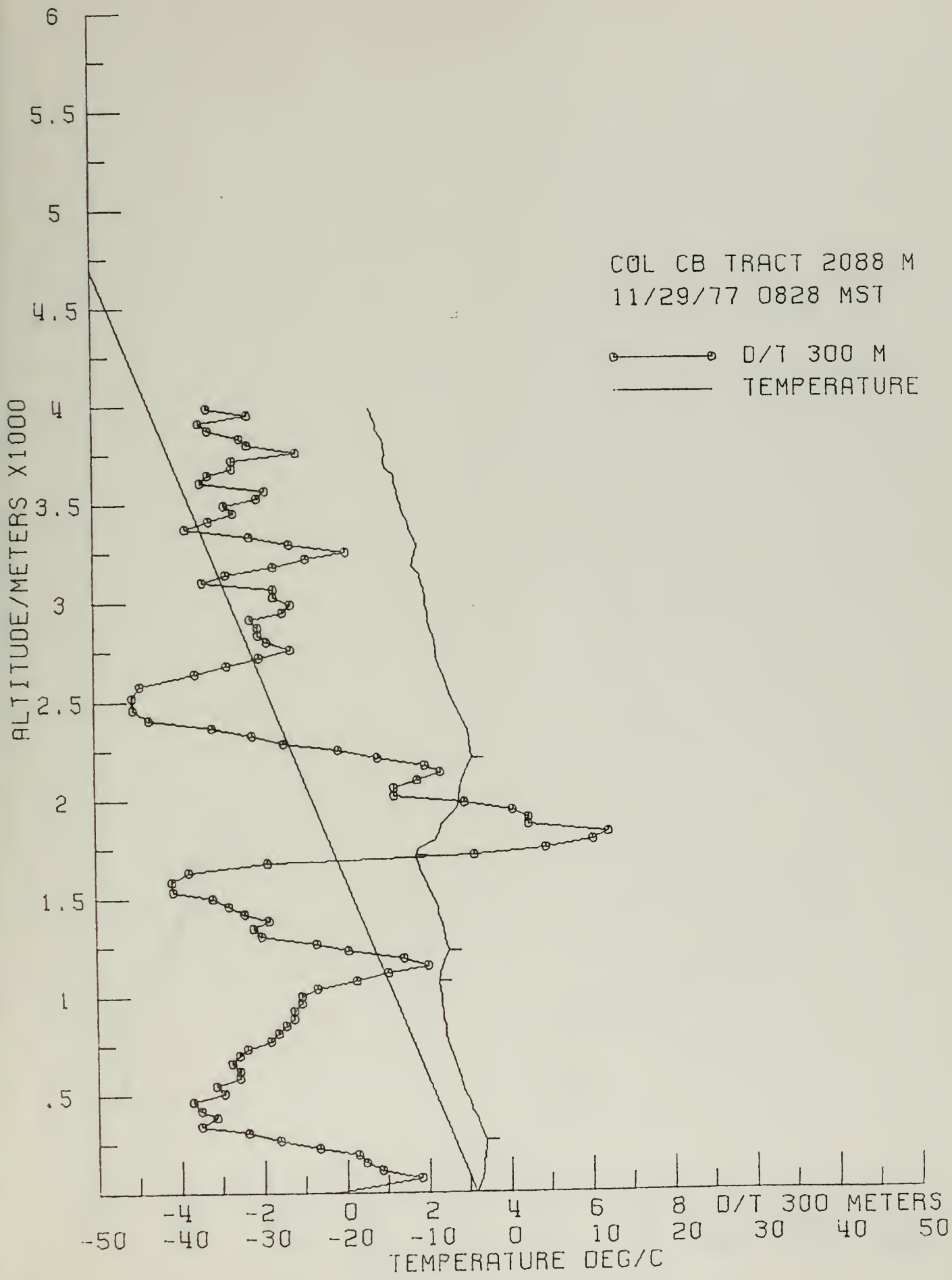
WIND DIRECTION (DEG)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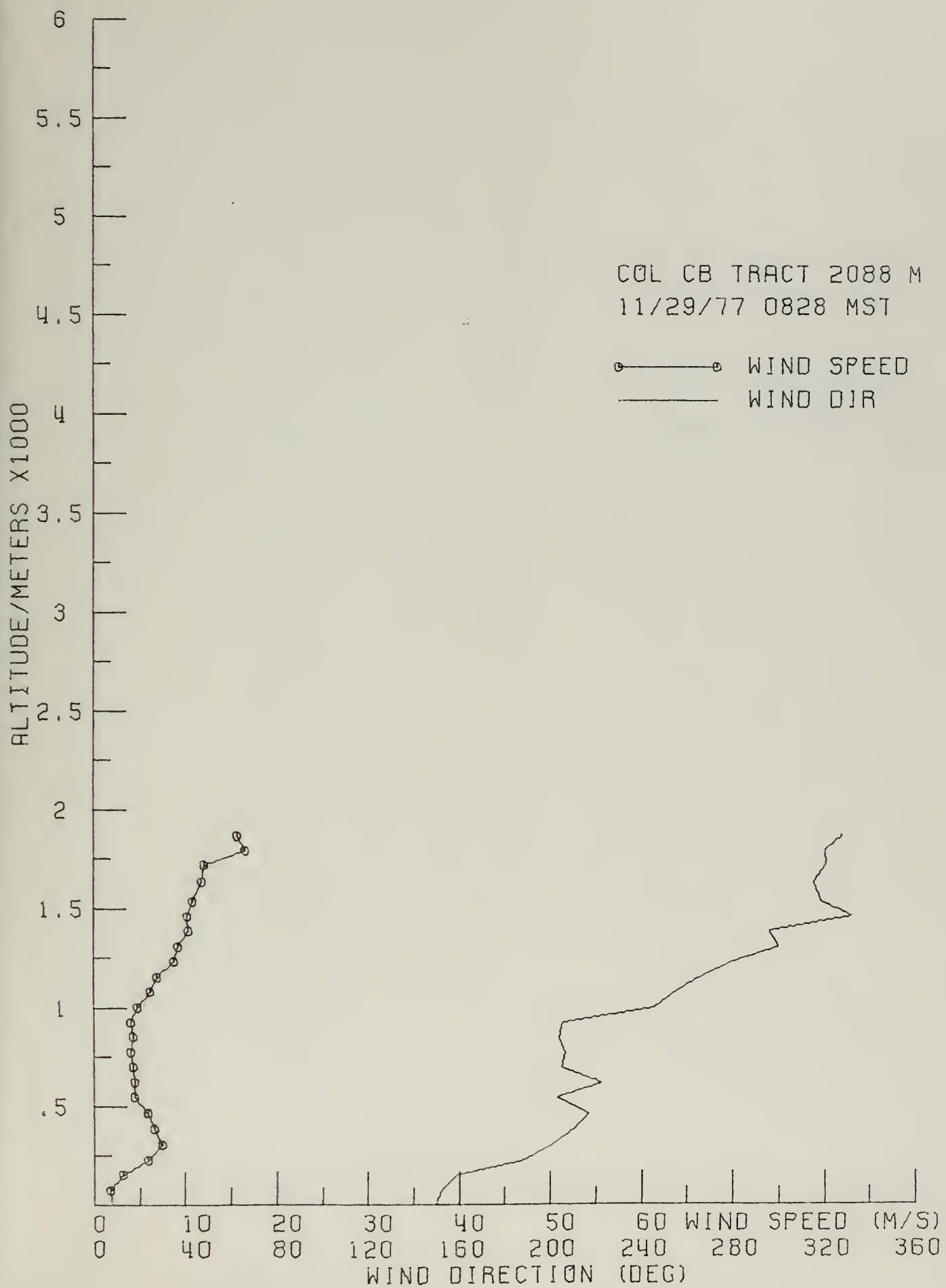
TEMPERATURE DEG/C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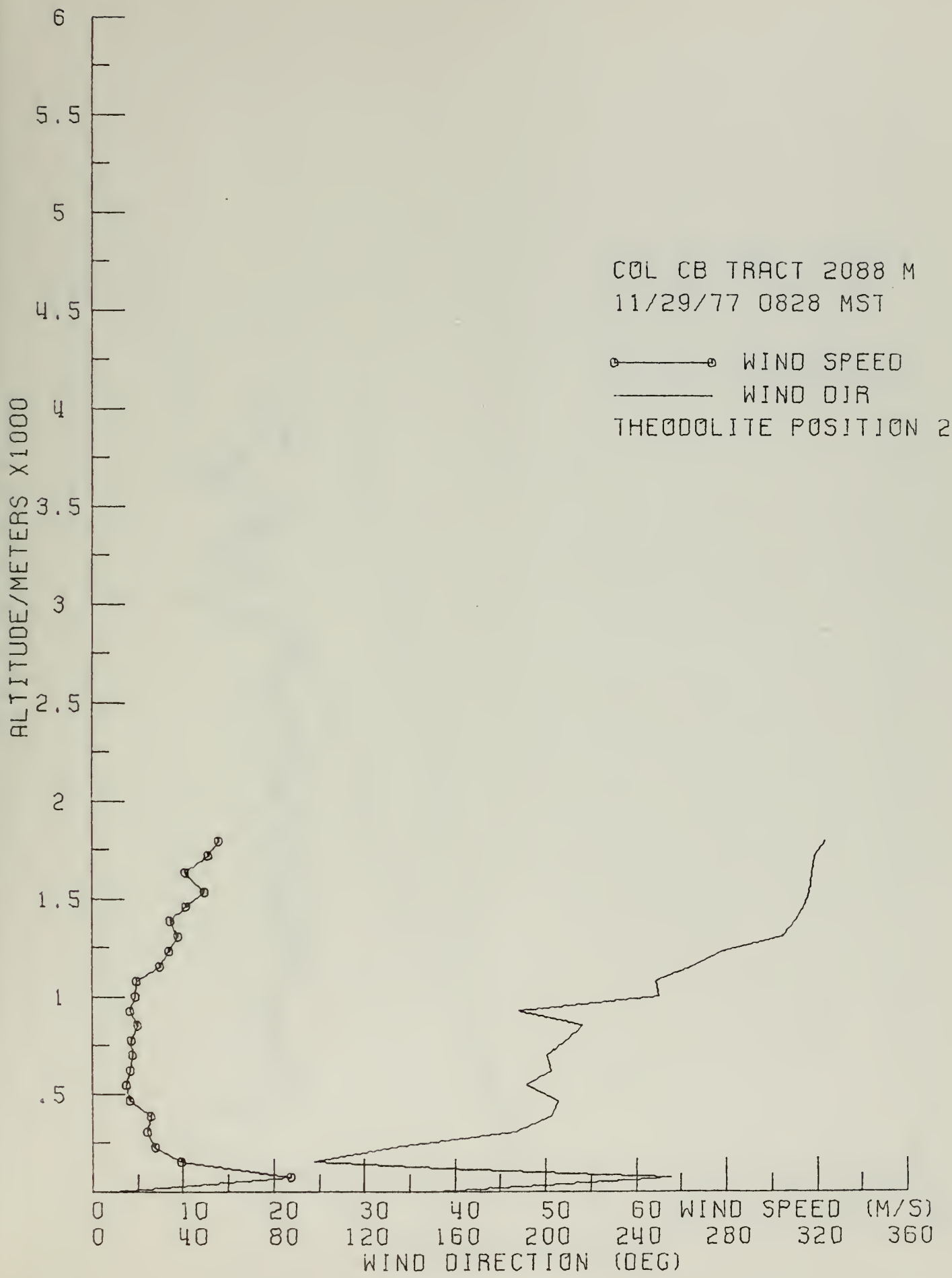
WIND DIRECTION (DEG)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WIND SPEED
WIND DIR
THEODOLITE POSITION 2
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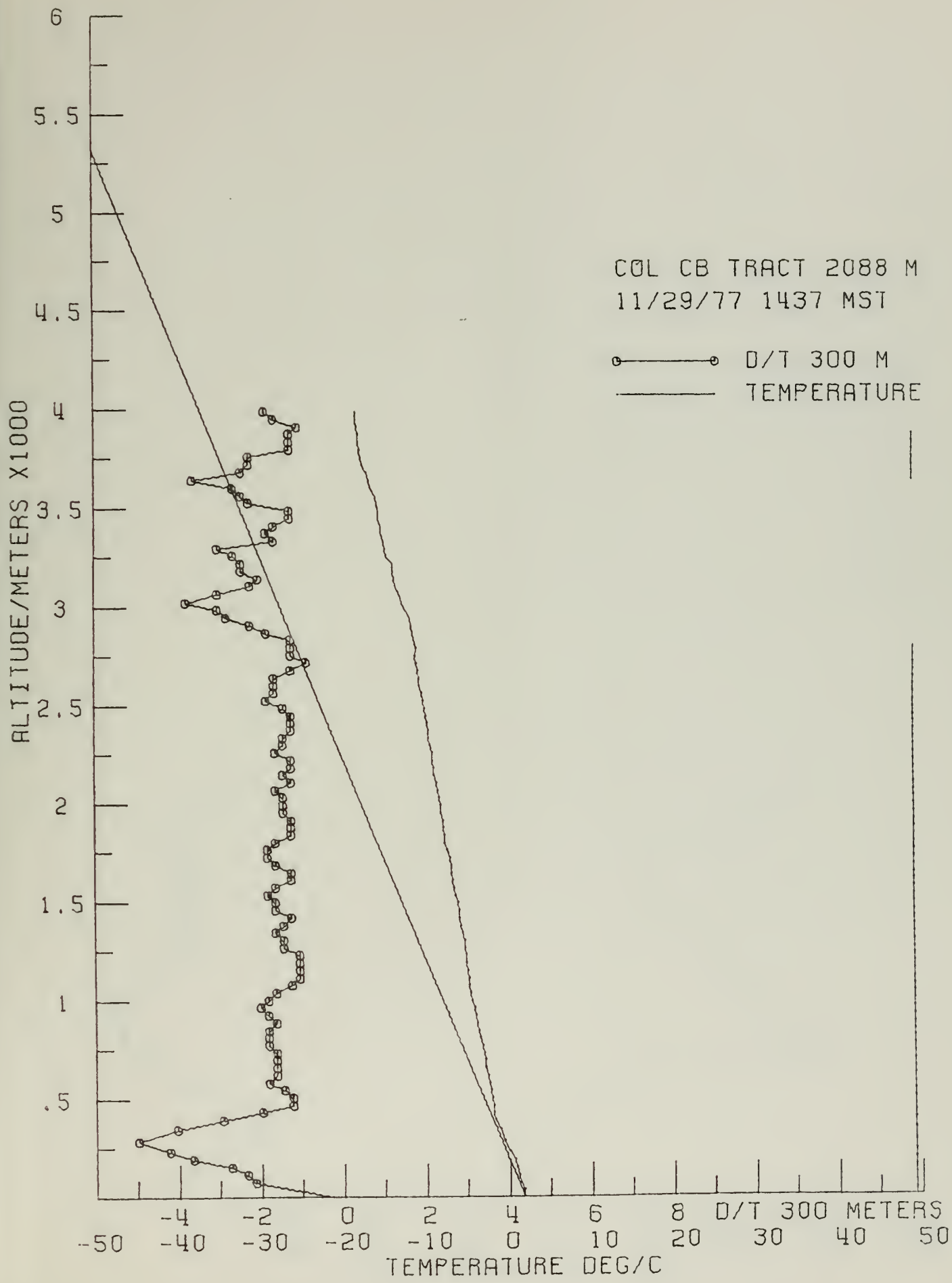
WIND DIRECTION (DEG)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D/T 300 METERS
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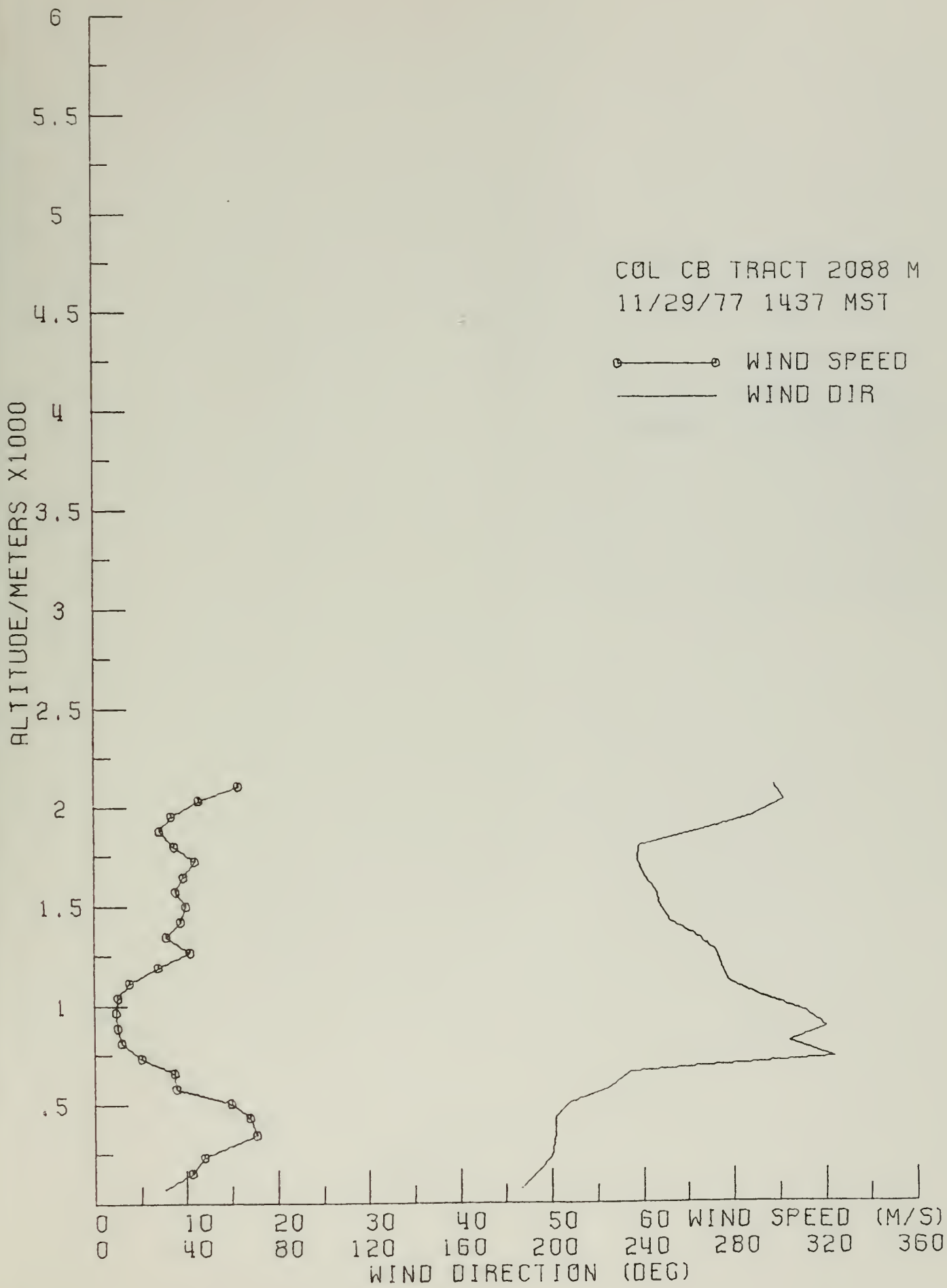
TEMPERATURE DEG/C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WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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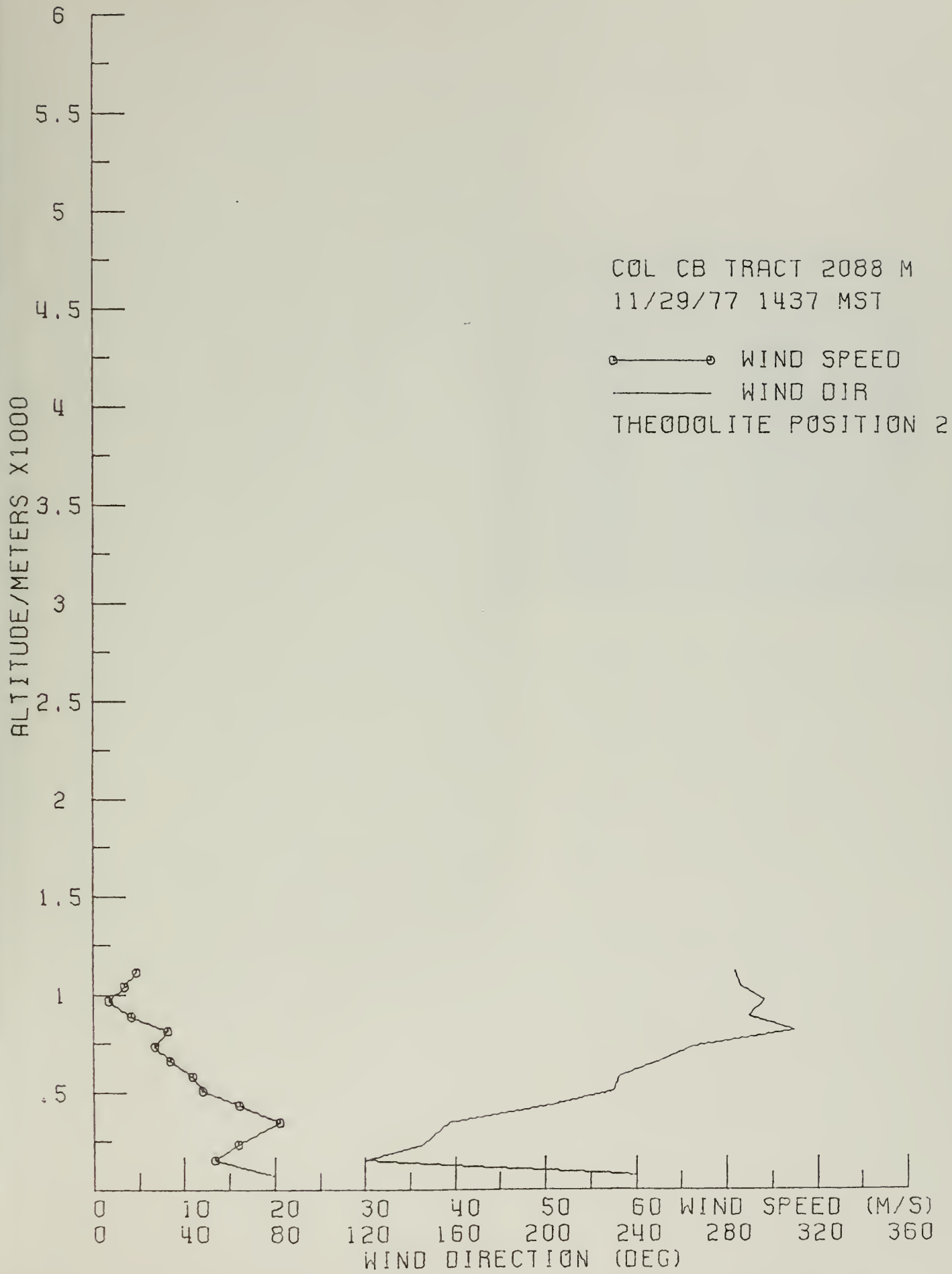
WIND DIRECTION (DEG)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11/29/77 1437 MST
WIND SPEED
WIND DIR
THEODOLITE POSITION 2
ALTITUDE/METERS X1000
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0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)

R'S CARD

361 no.1

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	OFFICE	DATE RETURNED

(Continued on reverse)

RECEIVED

MAR 1 6 1973

OFFICE OF
AREA OIL SHALE SUPERVISOR
U.S. G.S.